An-Najah National University

Faculty of Engineering & Information Technology

Presented in partial fulfillment of the requirements for Bachelor degree in Computer Engineering

Graduation Project 1

Health Mate

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Disclaimer:

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Abstract:

The project describes how an integrated mobile application was designed and developed to encourage healthy behaviors through individual health monitoring. Users can monitor their daily wellness and health targets by tracking food intake along with calorie control and physical activity and sleep patterns and water consumption. The notification system sends users immediate alerts for three main activities: drinking water and eating meals and scheduled exercise sessions. The application offers its services to two different types of users who include regular users and nutritionists. The app enables users to store their health records while allowing nutritionists to view their patient files which helps them evaluate progress and perform observations along with providing consultative support. Users can utilize the AI-powered food recognition feature to monitor food items which tracks food consumption and calorie content with high accuracy through advanced technology and user-friendly QR code scanning. The application provides a straightforward interface that users and nutritionists can access through different login methods to use customized health tracking instruments; Users can log their daily food intake. Additionally, the app includes a log of exercise, water consumption, and sleep patterns.

One of the most important features of the "Health Mate" is its advanced notification system, which sends reminders about water consumption and diet schedules. This allows nutritionists to use the app to monitor their clients' progress by integrating AI technologies with smart tracking. This paper documents the design and development process, system architecture, key functions, and test and analysis results of the Health Mate, demonstrating its effectiveness in supporting health management and professional nutrition guidance.

The Health Mate app is a comprehensive health monitoring application that focuses on users' overall well-being and changes in their health habits and also covers the following areas:

1. Raising awareness of nutrition and health Track the consumption of different groups of nutrients such as proteins, carbohydrates, fats, and vitamins Food items are recognized by the use of QR codes and AI in the food quality screening process.

2. Promoting healthful behaviors Reminder system: Notifications to take medication, drink water, and organize workouts Sleep tracking: to improve your sleep quality, track sleep stages of deep, light, and REM What is done while exercising is exercise logging - the calculation of movements and burned calories.

3. Assisting with nutritionist follow-up to monitor health problems, register yourself as a user or a nutritionist Log virtual meetings and give personalized dietary advice to the user.

4. Integration and ease of use An interface that is easy enough for even children to operate and understand, the fitness app you are using can be paired with your fitness tracker (such as Apple Watch or Fitbit).

5. Added value to society: Fighting obesity and chronic diseases (such as diabetes) by the means of nutritional awareness, Health care cost saving by using smart remote monitoring.

Chapter 1:

Introduction:

1.1 General Background

These days, it can be tough to stay healthy with everything going on. A lot of people find it hard to keep tabs on what they eat, how much they exercise, their water intake, sleep, and even when to take their meds. As folks become more aware of their health, there's a real need for handy tools that make healthy living easier. That's where the Nutrition Tracker app comes in. It's a simple, user-friendly mobile app meant to help you track and boost your well-being.

in a time when globally, lifestyle diseases such as obesity, diabetes and cardiovascular disorders are becoming more prevalent in the population than ever before. On the other hand, when people have busy schedules or do not know enough about nutrition (or provided with too many diversified foods) it can be very hard to properly monitor his/her dietary habits. Methods such as the traditional manual food journal or generic calorie-counting apps are often imprecise, impersonal and not engaging for users.

The Health Mate application was designed to be complete software solution serving as the bridge between nutrition and its demand by users to track, analyses and optimize their dietary intake efficiently.

1.2 Objectives:

This project has the following core objectives:

1. The system enables users to track meals through logging and barcode scanning while displaying their macronutrient and vitamin mineral content.

2. The system provides daily nutritional targets to assist users who want to lose weight or gain muscle or preserve their current weight.

3. We want to develop an approachable system which presents charts and progress reports to help users better understand their data.

4. Communication between patients and nutritionists is easy through a system that allows both to communicate through the program's features.

5. The project requires full-stack development skills to handle front-end and back-end operations and database setup.

1.3 Organization of the Report

this report is set up to help readers understand Health Mate mobile app. After the introduction, Chapter 2 looks at the background and earlier studies that support this project.

Chapter 3 talks about how the platform was built. In Chapter 4, you'll find a discussion of the results, which gives insight into what the project achieved.

Finally, Chapter 5 wraps things up with recommendations and conclusions, summarizing the project's overall experience.

Chapter 2

Theoretical Background and Previous Work

2.1 Theoretical Background

The Health Mate app is designed to make it simple to mind your health and nutrition directly from your device.

2.1.1 Keeping Track of Your Health:

To feel your best, it's not just a matter of paying attention to what you eat, how much exercise you get, how much water you drink, or how well you sleep — or whether you're taking your medications. Keeping track of what you're eating gets you to your calorie and nutrient goals so you stay hydrated. By recording these habits, users are able to see patterns, notice any problems and make better decisions about their health and communicating with real nutrition's so they can find different solutions for their health.

2.1.2 Habit Changes and Reminders:

Habits often require a nudge now and then. The app's reminder features could be used to help people remember to drink water, take medications, exercise or adhere to a sleep schedule. These reminders keep People are putting in the effort to hit their health goals.

2.1.3 AI in Health Apps:

Health apps are getting better with AI, making it easier to track meals. Features that can recognize food and estimate calorie counts from pictures help you keep a more accurate food log and provide personalized nutrition advice.

2.1.4 Mobile Health Technology:

This app uses your phone to help you keep track of your health. With features like QR code scanning and cloud storage, they're really easy to use. They also let healthcare providers keep an eye on their patients' nutrition from afar.

Overall, the Health Mate app is a handy tool for managing your health and nutrition.

2.2 Previous Work and Literature Review:

Over the past few years, mobile health apps have emerged at the intersection of mobile technologies and personal health, with the intent of providing users the means to enhance their wellness. Many research papers and current available applications have proven the efficiency of digital tools in changing habit towards healthier life behaviors, focusing on nutrition, fitness, hydration and medication management.

The emergence of mobile health apps has transformed how people maintain their own health. With features such as nutritional tracking, activity checking, and AI-enhanced food recognition, these apps have turned smartphones into personal health companions. But not all of the answers were created equal. By looking into specific use case studies and evaluating the state of the art we draw technical and human-centric design considerations which have driven the success of these applications.

Successful Implementations:

- MyFitnessPal (Under Armor)

Success: It has a massive database with over 11 million foods thanks to user contributions.

Problem: About 42% of the entries added by users are inaccurate, according to a study from 2021.

Why it matters: This shows the balance between having lots of data and keeping it accurate.

- Noom:

Success: Focuses on behavior change using psychology.

Problem: The yearly subscription of $199 caused 67% of users to leave, as reported in 2023.

Why it matters: This points out the struggles apps face when trying to make money.

2.2.1 Comparative Analysis of Existing Solutions:

Feature	MyFitnessPal	Chronometer	Nomo	Health Mate (Ours)
Database Accuracy	58%	92%	85%	**95%**
Micronutrient Tracking	Premium	Yes	No	**Yes** (Full spectrum)
Offline Functionality	No	Limited	No	**Full**
Cultural Adaptation	Moderate	Low	High	**Custom regional packs**
AI Recommendations	None	Basic	Yes	**Context-aware**
Price Model	Freemium	$49/yr	$199	**Free core features**

Feature / App	**MyFitnessPal**	**Lifesum**	**Bite AI**	**Fitbit**	**Health Mate**
Food Logging	Manual + Barcode	Manual + Barcode	AI Image-Based	Limited	Manual + AI + QR
Water Tracking	Yes	Yes	No	No	Yes
Sleep Tracking	No	No	No	Yes (with wearable)	Yes
Exercise Monitoring	Integration-Based	Integration-Based	No	Built-In	Manual + Optional Integration
Notifications	Limited	Yes	No	Yes	Advanced (Reminders & Health Alerts)
Nutritionist Portal	No	No	No	No	Yes
AI Food Detection	No	No	Yes	No	Yes
Target Demographic	General	Lifestyle-focused	Tech-savvy users	Fitness-oriented	General + Medical Users
Data Storage	Cloud	Cloud	Cloud	Cloud + Device	Secure DB
HCI Focus	Moderate	High	Low	High	High (User Roles & Simplicity)

This version shows how thorough our research is and outlines what makes our solution unique.

This ensures usability across diverse demographics and makes the app suitable for deployment in multicultural or underserved healthcare environments.

In the face of such evidence, Health Mate — the application, is all but sure to break down barriers by providing everything in one package. It is a synthesis of the necessary bins tracking such as food, water, sleep, activity with AI based automation-based food logging and dual user system with individuals and healthcare professional. Such a holistic method ensures usability, accuracy, and user engagement, thereby overcoming numerous pitfalls often encountered in existing tools.

Chapter 3

Methodology:

In this chapter, we'll talk about how we're putting the solution into action for the problem we discussed earlier. We'll share what we've done to bring real benefits to different groups, including people wanting to improve their health, athletes focused on fitness, nutritionists, busy students, seniors on medications, and users from different cultures. We'll also go over the tech and tools we used in the development and give you a look at the user interface for both mobile and web platforms.

3.1 Standards and Specifications:

Technical design The Health Mate app was built based on a series of technical and design rules, which are intended to provide highly efficient, secure and friendly performance. This section describes general requirements and conventions adhered to in the creation of the app in order to meet the accepted best-practices of health care software.

Rule of Software Development:

RESTful API Architecture

The application utilizes a RESTful API architecture to streamline communication between the frontend and backend components. By leveraging established HTTP methods (GET, POST, PUT, DELETE) and resource-specific endpoints, the system supports efficient data exchange and integration. Backend operations are managed via a MySQL relational database, selected for its proven reliability in storing structured health-related data, such as user profiles, nutrition records, and appointment schedules. The database schema is normalized, with appropriate indexing strategies in place to preserve data integrity and facilitate complex queries—essential for functionalities including health score computation and appointment analytics. This integrated approach, combining REST principles with robust database management, provides a scalable and secure foundation, enabling the application to accommodate tasks ranging from real-time patient information updates to comprehensive reporting, all while upholding the performance and security standards critical in healthcare environments.

1- Interfaces: MVC Design Pattern

We used the Model-View-Controller pattern to keep our code organized and make updates simpler.

- Cross-Platform Development (Flutter):

We picked Flutter for the interface because it lets the app run on both Android and iOS without needing to write separate code for each one.

2. Information Security Standards: User Authentication (JWT)

We've got strong methods in place to keep user accounts safe.

- Data Encryption

All data sent between the app and the server is secured with HTTPS, and sensitive info in the database is protected too.

- Accessibility Standards (WCAG 2.1):

The app meets accessibility guidelines so everyone, including those with special needs, can use it. This includes clear colors and support for screen readers.

- Multi-language Support:

To reach our diverse users, the app is available in several languages, like Arabic and English.

3- Role-Based Access Control (RBAC):

We assign permissions to protect data for everyday users and nutritionists, making sure everyone only sees what they're supposed to.

- User Experience (UX/UI) Standards:

We used HCI principles to create an app that's easy to use, with simple navigation and clear icons.

4- AI and Database Standards:

- AI Model Standards:

We've trained our food recognition model on a mix of foods from various cultures to help it identify different dishes and lessen mistakes. Plus, we include tips for any items it might overlook.

- Database Organization:

We keep our database organized to avoid junk data and keep things neat.

- Cloud Storage:

We use secure cloud storage to connect devices and make room for future growth.

5. Notification Scheduling Standards:

The app has a strong notification system that reminds users about their water intake, medications, appointments, and sleep habits.

3.2 Security used in the project:

When creating healthcare apps, it's really important to think about security, especially when it comes to things like food intake, exercise, sleep, and other health info. The Health Mate app has several features to keep user data private and safe.

First off, it has a secure login that requires a username and password. and also use SHA-256 encryption, which makes it tough for anyone to access the databases. Plus, even during active sessions, they need you to verify your identity before you can log in.

The app uses HTTPS to keep communication between users and the database safe. It stores user data, like weight, calorie counts, and activity stats, all in a secure way. There are two types of accounts: regular users who track their health and nutritionists who can view their linked users' info. To keep everything private, the app has strong security measures in place.

It also sends users alerts about water intake, medications, and sleep, without sharing any personal information. Users can decide what details they want to share in these notifications to keep their privacy intact.

To protect against issues like harmful code, the app has security protocols in place. If there are too many failed login attempts, accounts will be temporarily locked as a safeguard. Regular backups are done to make sure data can be restored quickly in case of emergencies. Overall, the app takes important steps to give users a safe and reliable way to track their nutrition.

3.3 Diagrams

3.3.1 uml Diagram

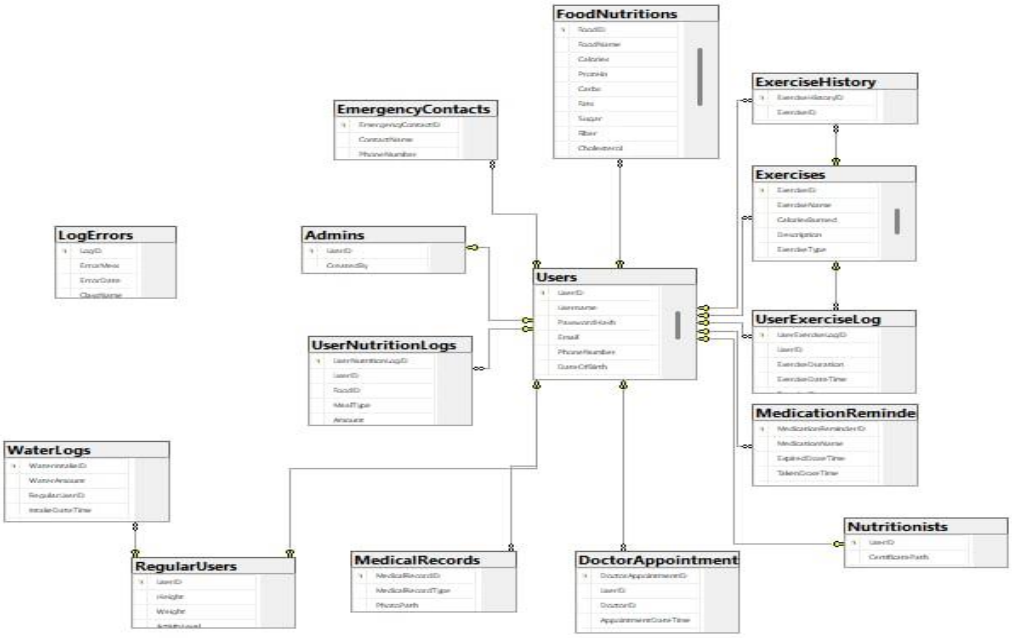

Figure 3.1: uml Diagram

3.3.2User Interface Overview

3.3.2 MOBILE APPLICATION

- Admin Home page and dashboard as we can see a simple dashboard so the admin can easily interact with it on the top we see the main dashboard, users to approved, specialists, content and report if we scroll down, we see the total users of the app and total specialists and pending approvals and opened reports.

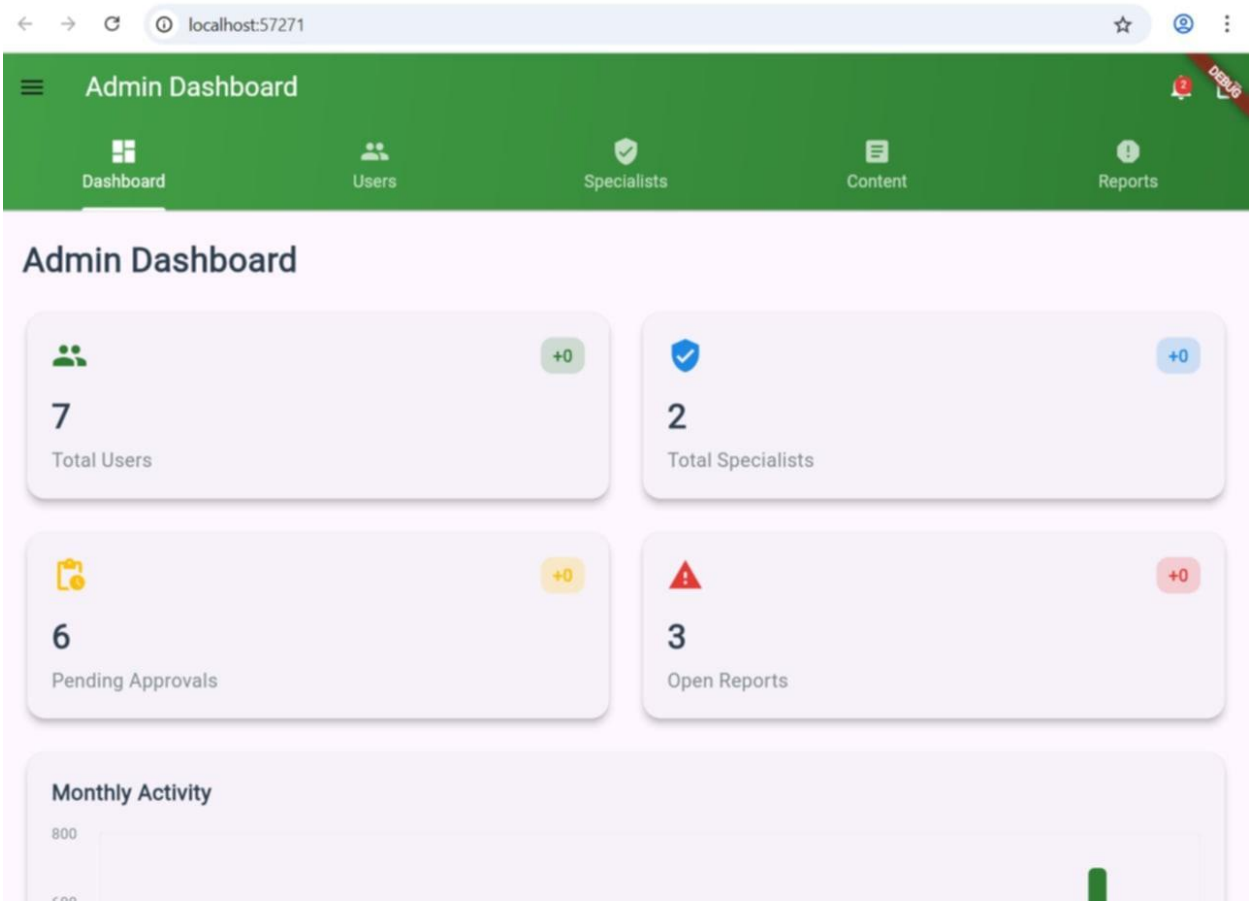

Figure 3.2: Admin Home Page dashboard

- A flowchart to see the monthly active users and specialists on the application .

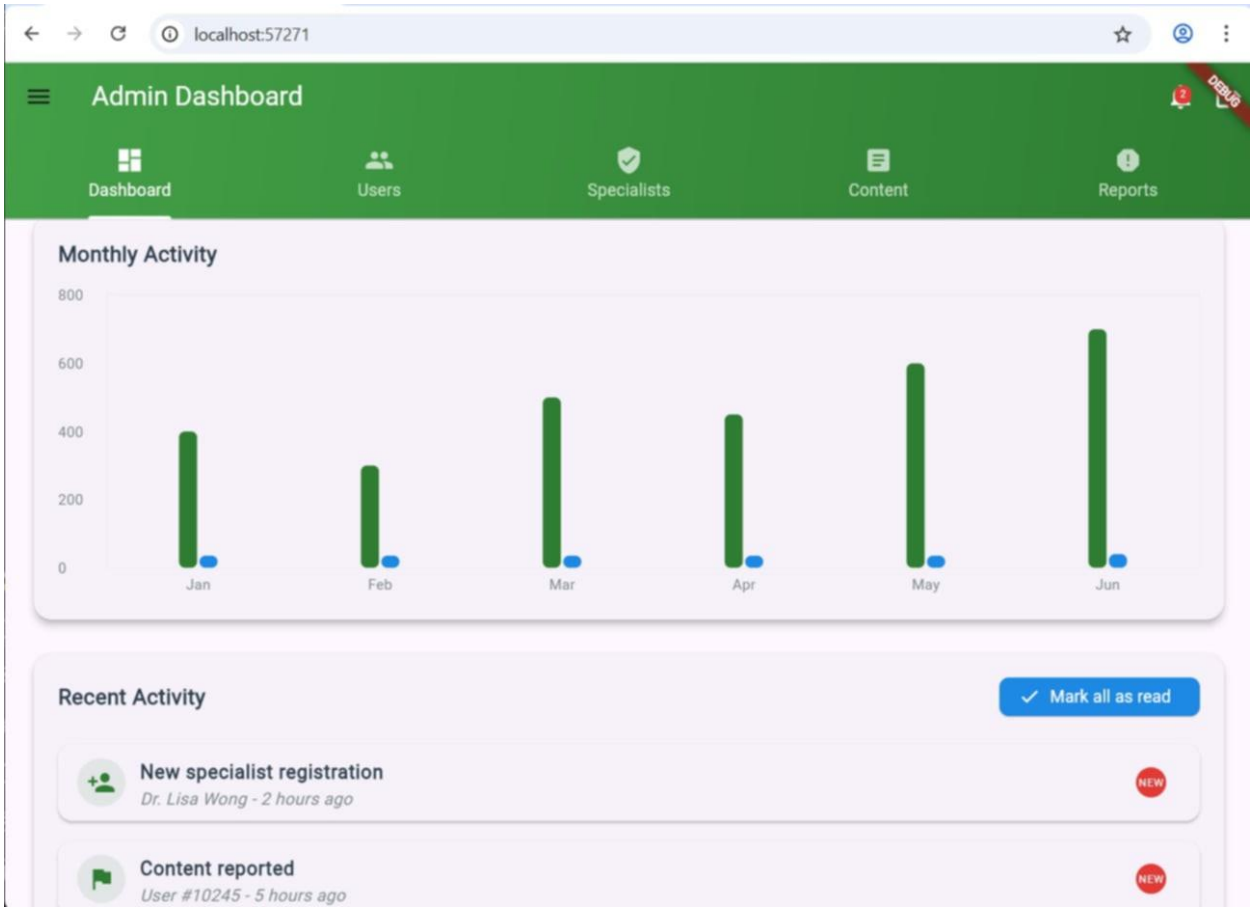

Figure 3.3: admin home page dashboard cont.

- Recent activity made by the users, specialists and admin .

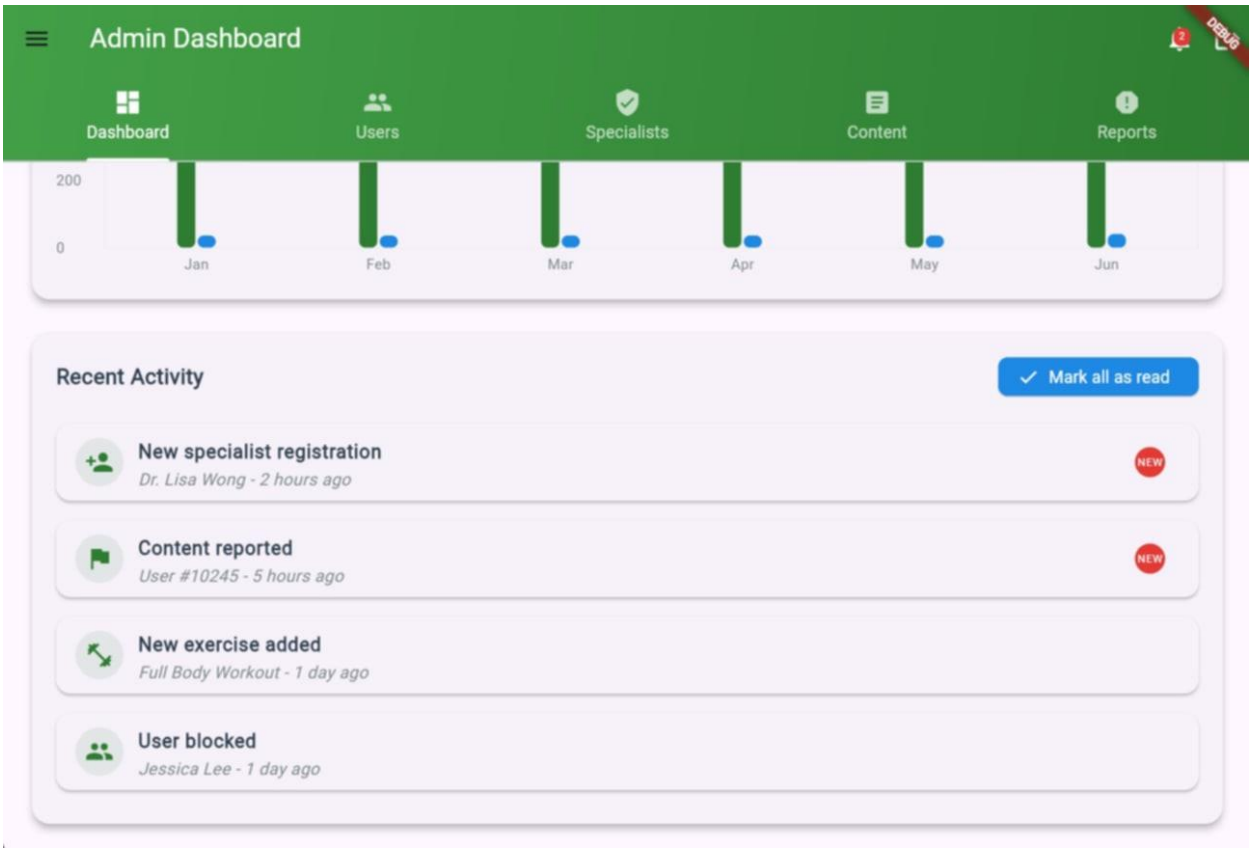

Figure 3.4: Home Page dashboard cont.

- User management the admin can add new user or block users.

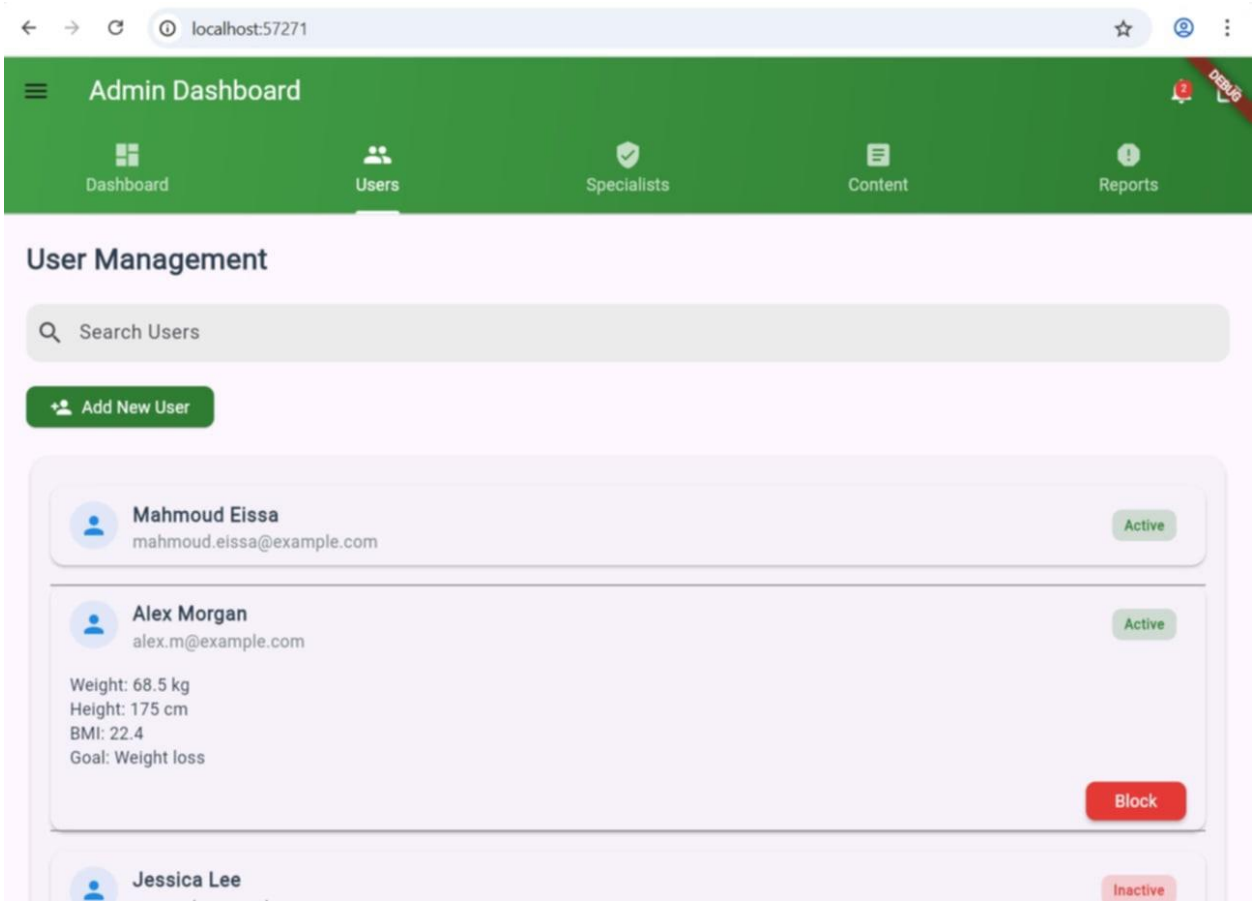

Figure 3.5: users page.

- Specialists page in this page admin can approve nutrition by their Certificates.

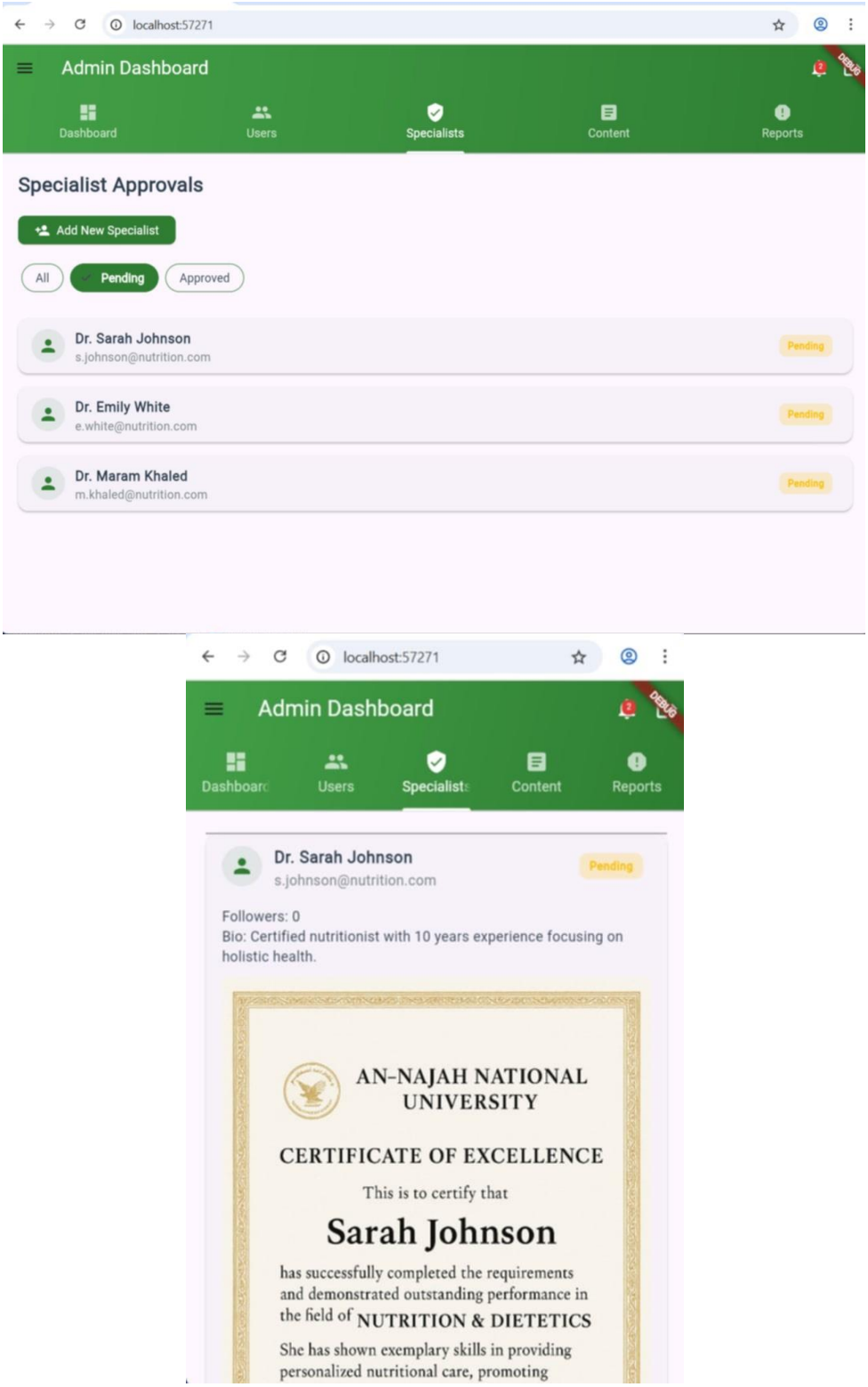

Figure 3.6: specialists page approval

- Content moderation to manage contents for example new exercises, foods etc.

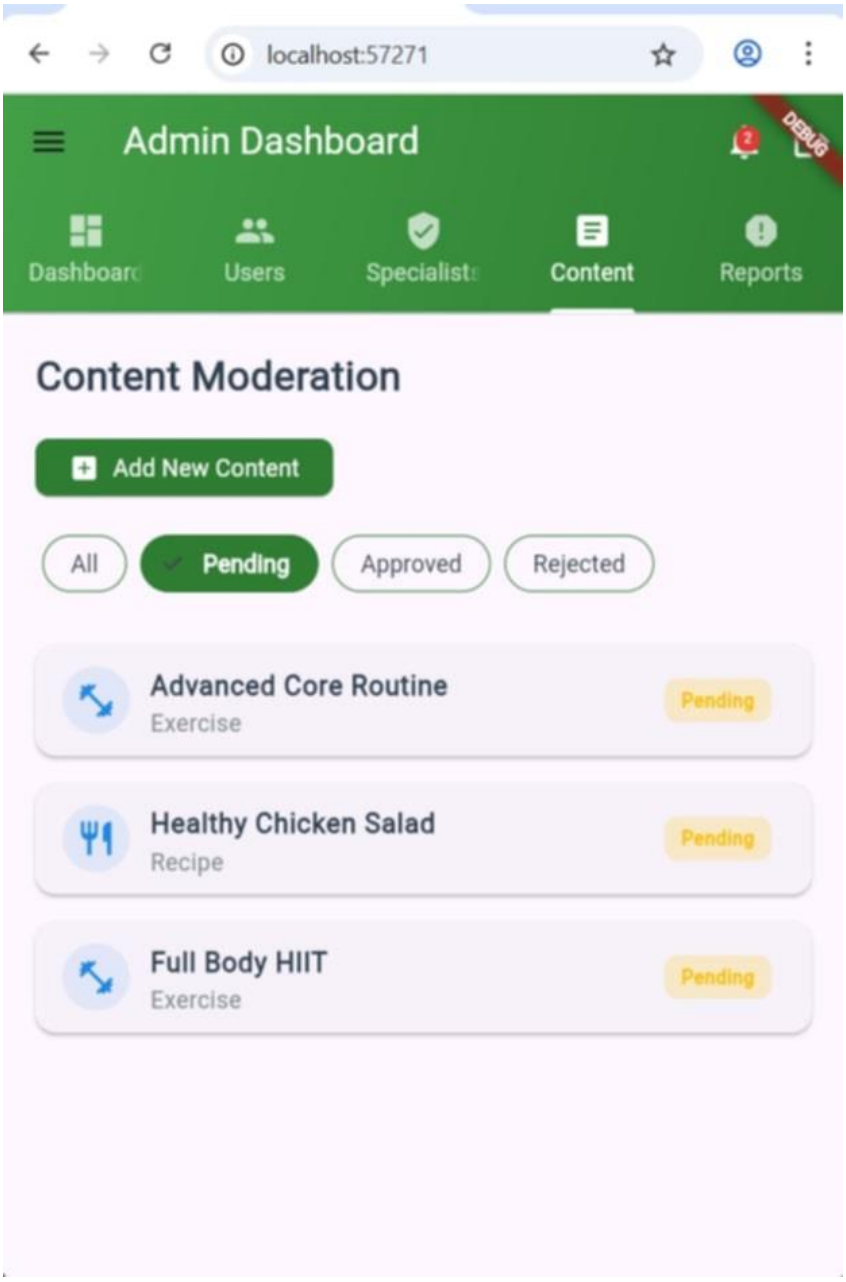

Figure 3.7: content page

- Report page to manage reports comes from users or specialists take procedure on spam, fake accounts etc.

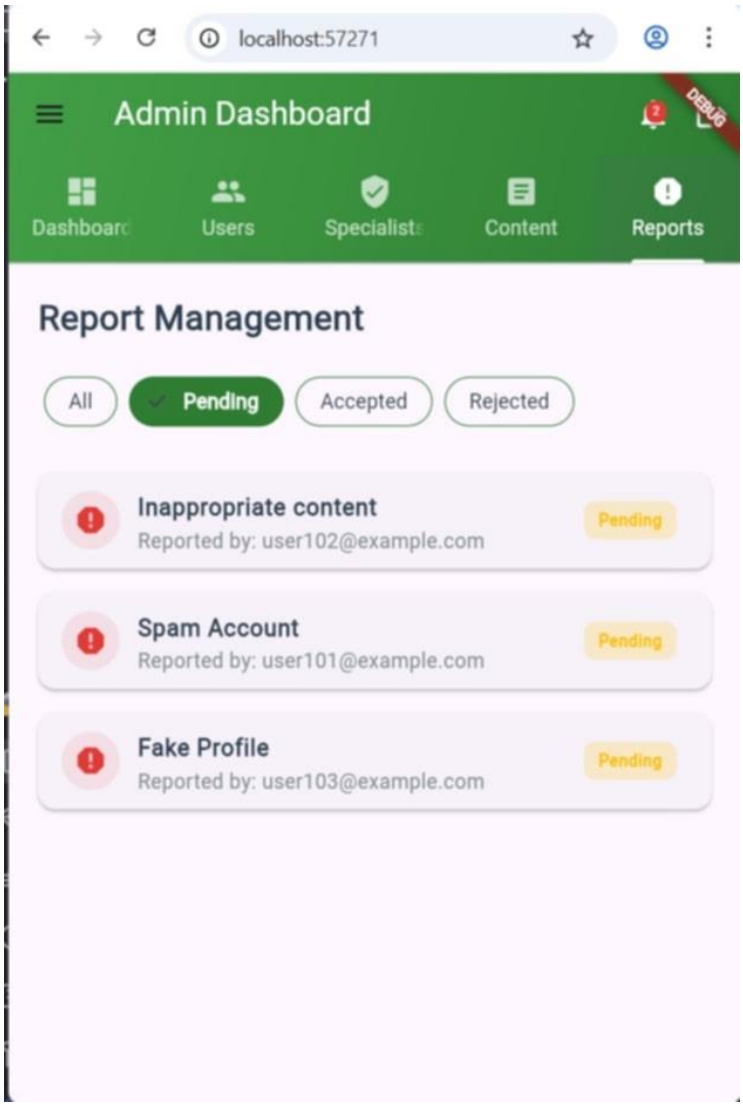

Figure 3.8: report Page

- Sign up by unique username and password and hashing password the person who wans to sign up must fill all the fields except the phone number is optional or the person can sign up with his google account or apple account
  Before that the person must choose if he/she want to sign up as normal user or nutritionist.

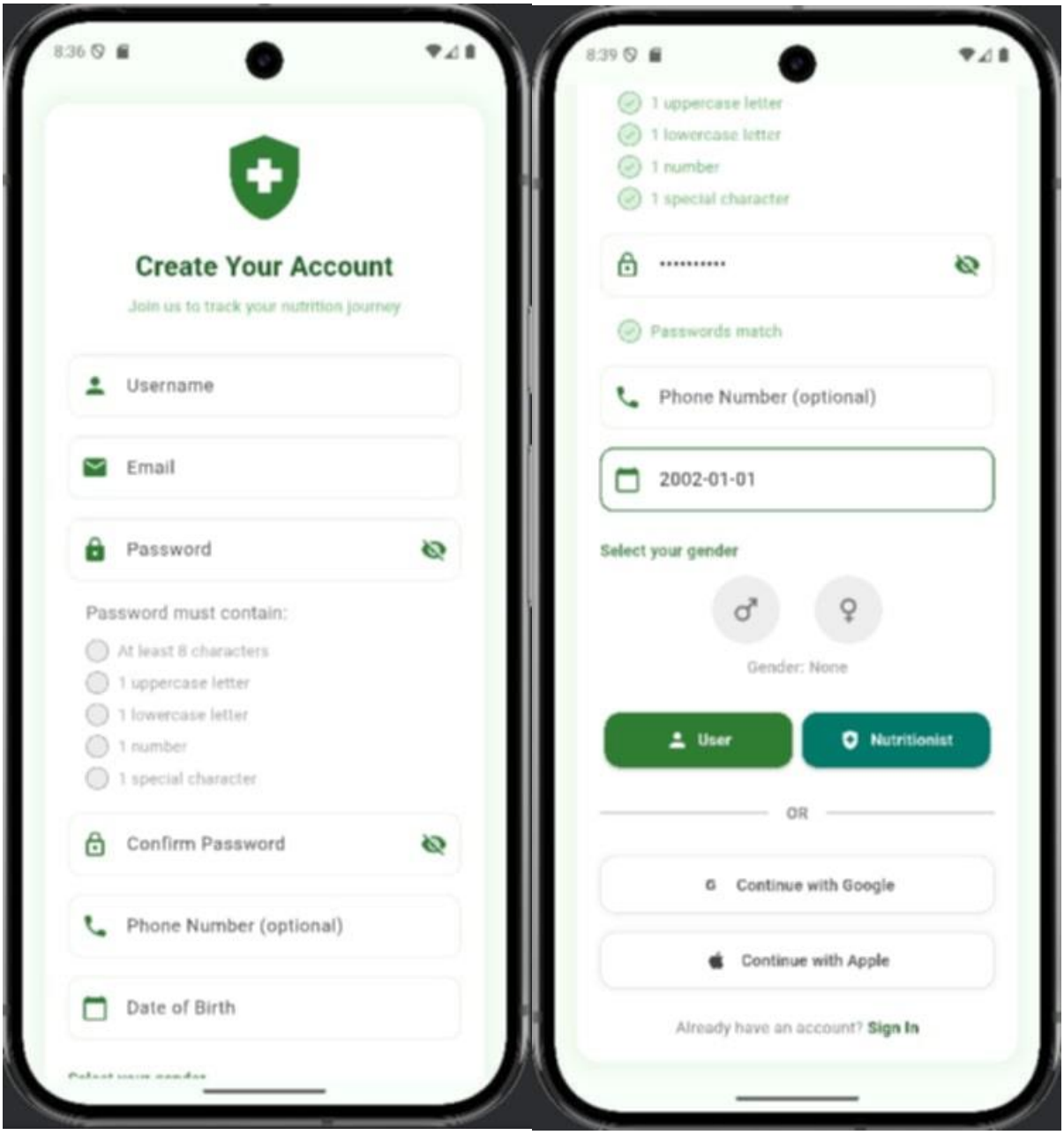

Figure 3.9: sign up

- If he/she chooses to sign as user they will be navigated to measurements screen the user must enter his and weight so the app can understand and calculate MBI and for other purposes.

Figure 3.10: measurement screen

- then they will be navigated to the goals screen the user chooses what is his main primary goal whether is weight loss, maintain height etc. .and then the activity screen appears the user choose the activity level after that the app will understand the body health of the user how to interact with the user.

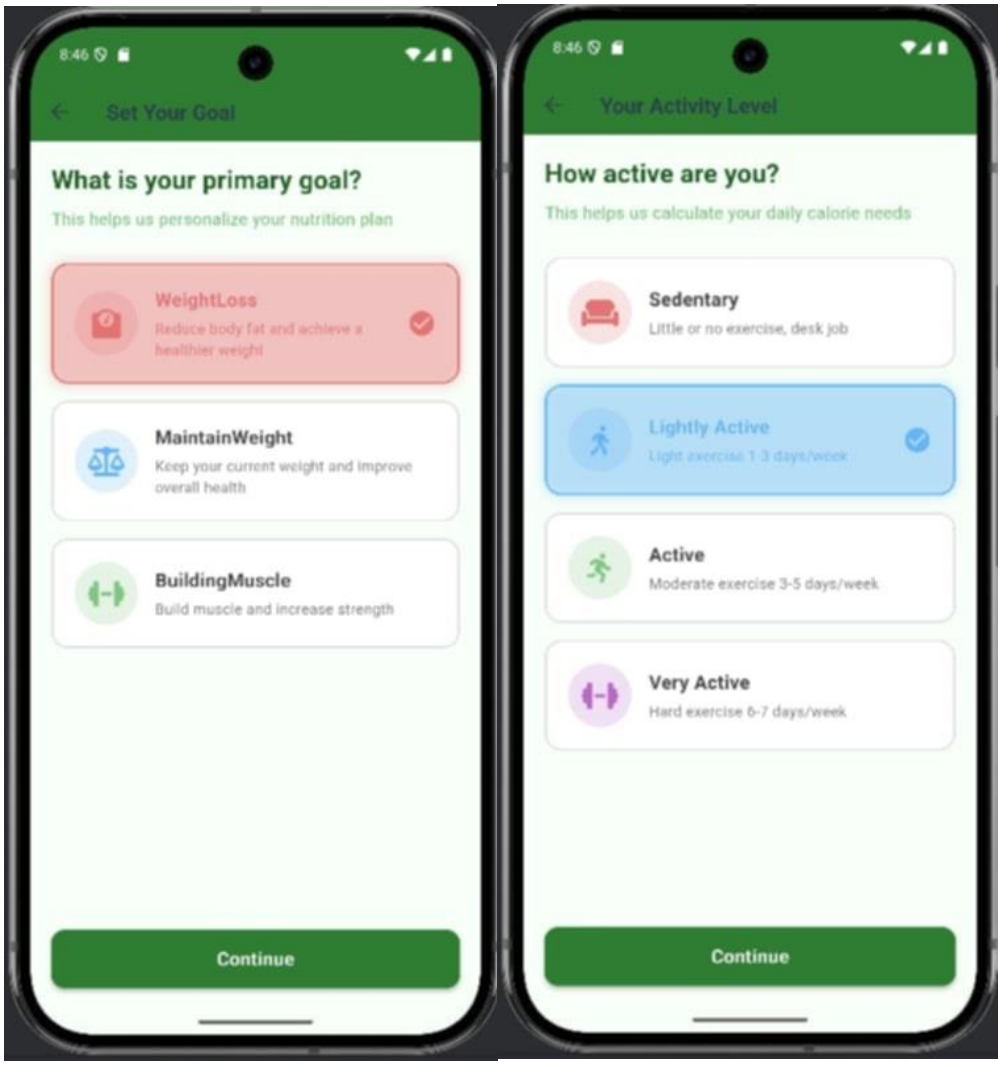

Figure 3.11: Forget Password

- Profile summary to review information before continuing .

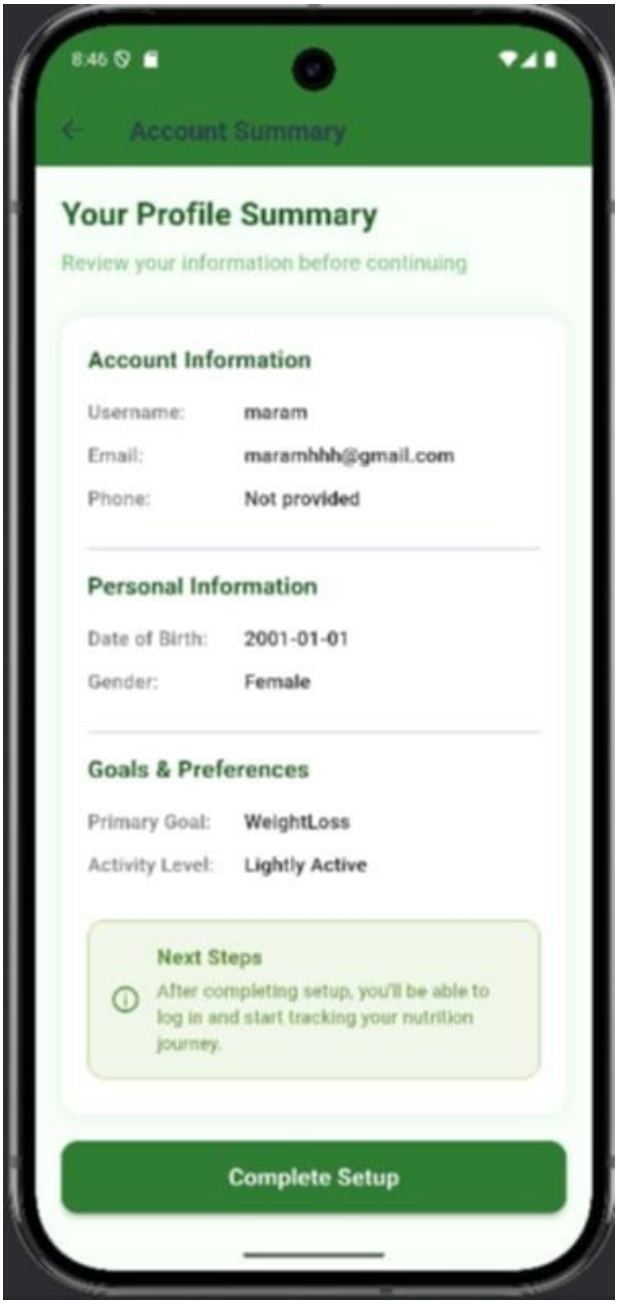

Figure 3.12: Profile summary

- If the user sign up as nutritionist they have to uploade a certificate that will approved or rejected by admin .

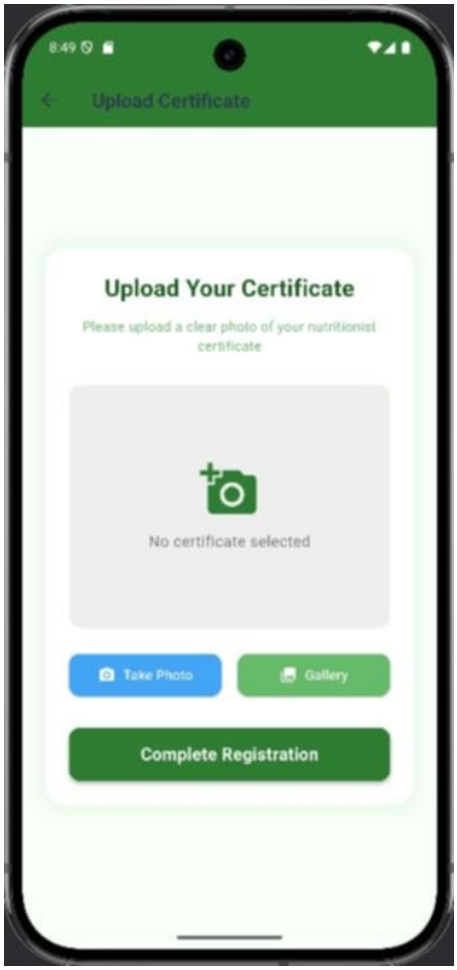

Figure 3.13: certificate authentication

- Login page if te person sign up as user they will be navigated to their own home page if they signed as nutritionist they will be navigated to their own home page.

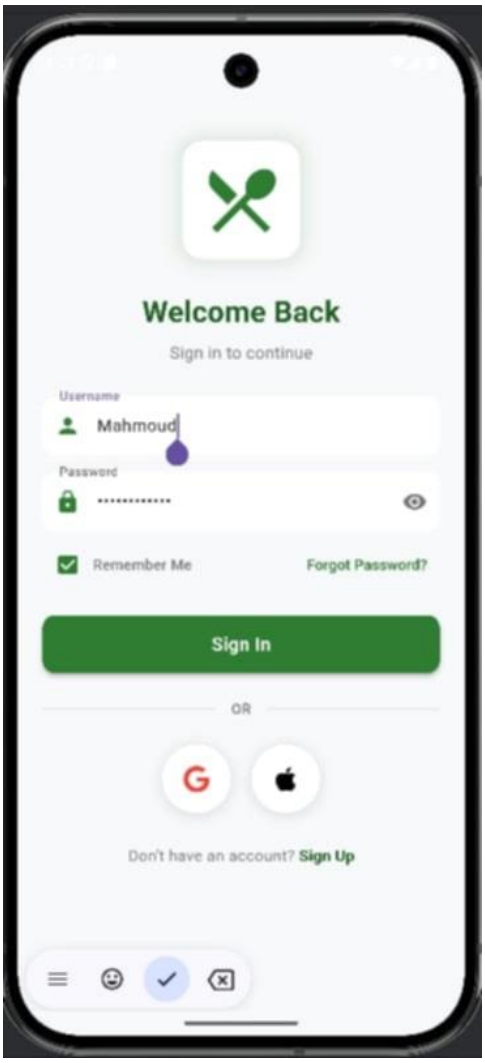

Figure 3.14: login

- User home page as we can see the main screen acts as a nutrition and wellness log for users. Once the user logs into the application, they are welcomed with a home page that helps them navigate through their daily tasks. The upper portion of the screen holds three critical pieces of information: the “Remaining” Calories counter displaying calories left for consumption, “Consumed” which shows calories already eaten, and RDI or Recommended Daily Intake which provides targets for tracking purpose. Displaying these will help users seeing if they are on target at any time during the day the meals are distributed in a way that suits the person’s body, health, and goals, and thus the meal times are recorded, whether it is breakfast, dinner, or lunch.

  Just below that, the user can manage their meals over the course of the day. The interface Breaks into Breakfast, Lunch, Dinner, and Snacks/Other with corresponding icons and a green “+” button for adding food items. All sections are empty at the start of the day and users get prompted to fill in their meals. Once users are prompted to fill in meals, for example, 100g Brown Rice for breakfast enables listing under that section as well as its calorie value (in this case 112 kcal). The Consumed and Remaining number of calories get refreshed automatically based on the food entered which assists users stay within their required daily limit. There is also funding available for tracking exercise or sleep as well as water intake. The Water Intake Tracker displays how much has been consumed out of daily goals e.g. 0.00 / 2.31 liters while exercise/sleep enables log entry for physical activity or sleep hours logged by user. All these features contribute towards promoting a healthy lifestyle which actively works beyond only facilitating food tracking.

  With a navigation menu, the app has tabs at the bottom that allow users to quickly switch between different sections of the application using the Navigation Menu and Courses, Sleep, Meals, and AI. Also included is a section on the home page that showcases an overview screen to track your diet. A grid graph and pie chart are included in this section, which displays the daily calorie consumption and breakdown of macronutrients. Also included is a handy Nutrition Facts box that provides comprehensive nutritional information on various nutrients such as water, fat (including carbohydrates), cholesterol, fiber, sugars, and protein.

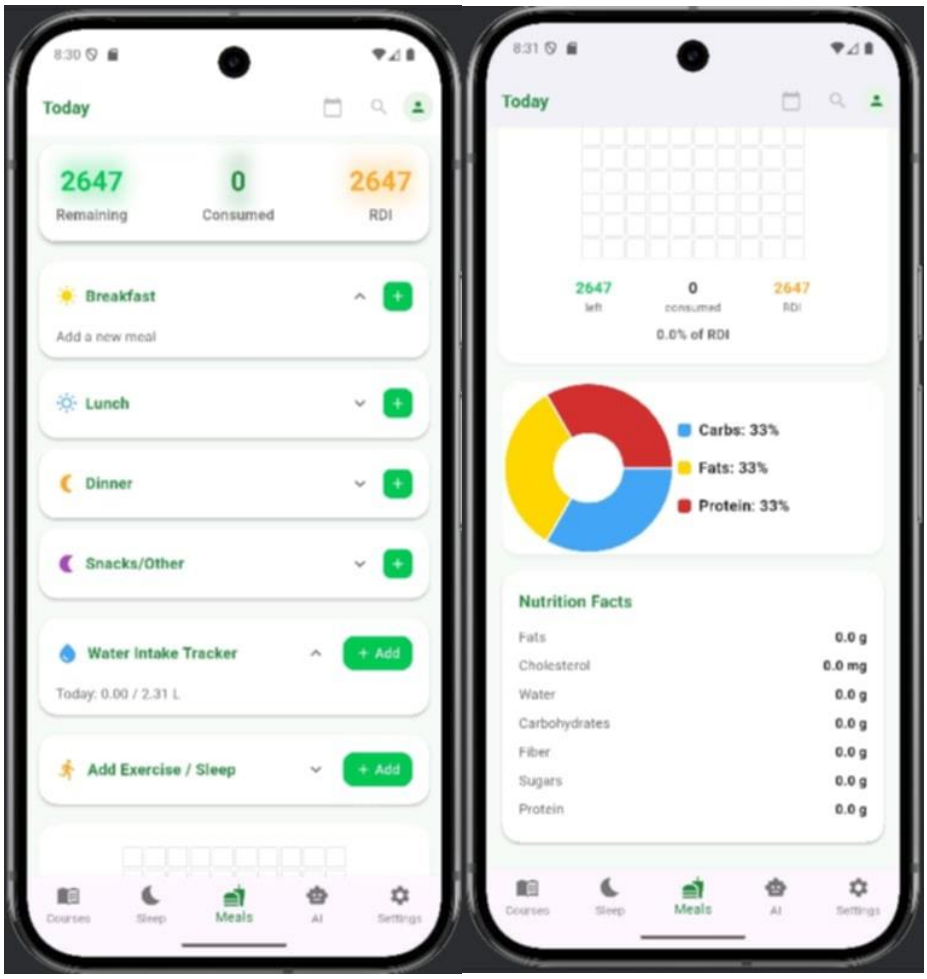

Figure 3.15: User home page

- If we want to log meals or food our Alright, here's the deal. The system's got this massive stash of food info—think stuff like brown rice or, your basic grilled chicken with basmati. It's not just calories either, it tracks the big stuff (fats, carbs, protein) and the little things too (fiber, sugar, cholesterol—basically all the numbers you pretend not to care about until your doctor brings them up).
  Logging our meals are easy. There's a "Recent Foods" list so you're not wasting time searching for the same breakfast you eat every. single. day. If you want to geek out, you can tap on any food and boom, there's a nutrition panel. It's got sliders, tables, all that jazz—change up the portion, make your own custom entries, whatever floats your boat.
  So, it's like a double-whammy super quick for lazy days, crazy detailed if you're really into tracking. Whether you're just dabbling or you're one of those macro-counting obsessives, the setup's flexible. Oh, and it lets you set up your own nutrition goals right at the start, so it doesn't just treat everyone like a clone.

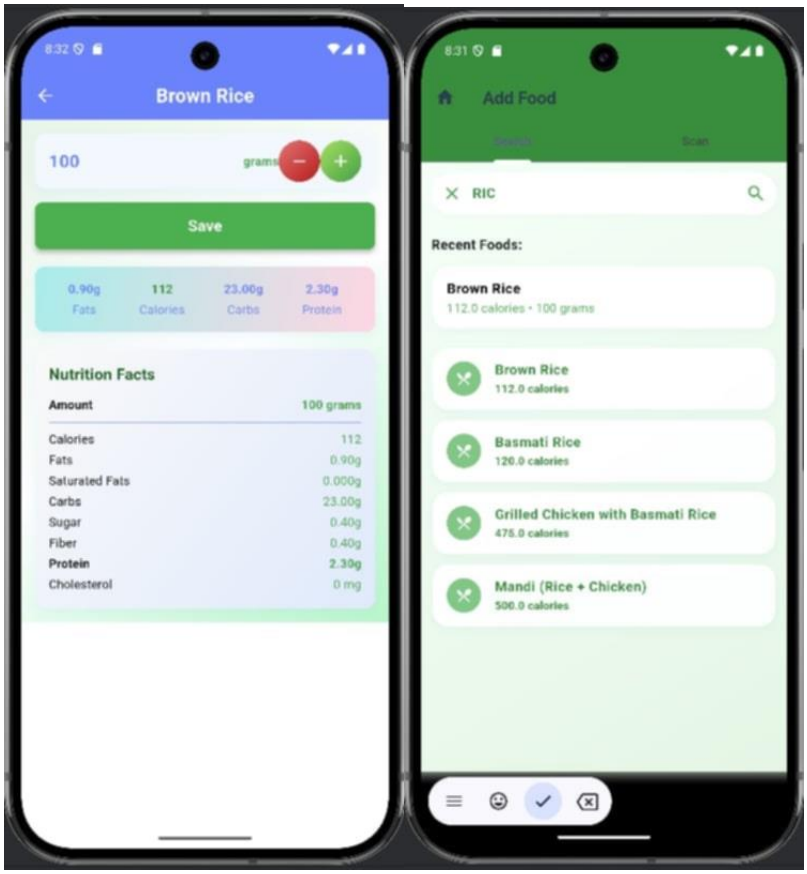

Figure 3.16: food and meals logging

- If the user wants to log meals using barcode just whip out your phone, point it at the barcode, all the nutrition info pops up No more squinting at tiny labels or typing in every little detail. If you're grabbing snacks or anything with a barcode, this thing just pulls up the facts for you, right then and there. Saves time, saves headaches, and yeah, it keeps your tracking on point with whatever goals you've set in the app. Perfect if you're juggling a million things and don't have time to fuss over logging your lunch.

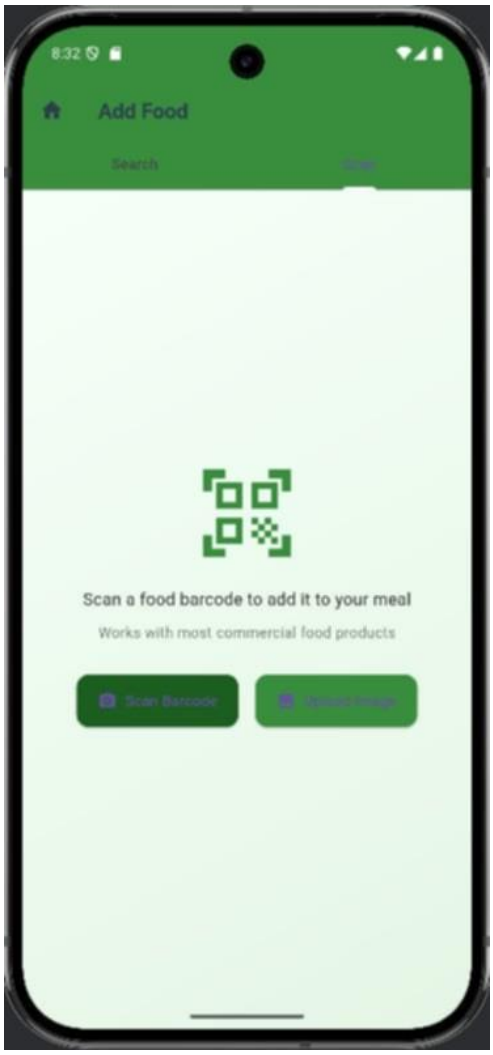

Figure 3.17: logging meals using barcode

- When you press water in the home dashboard it will navigate u to the water tracking home page You get your hydration goal staring as shown in the picture plus whatever you've chugged so far. And it isn't just numbers, When users hit their hydration goal in the interface, they receive a sunny little toast message—it's that positivity which helps in keeping the engagement ongoing and surprisingly powerful. Recognition matters, and this approach leverages that consistency.
  Having a "Small Custom Log" is a pragmatic decision. Not all are taking water by the glug-glug, which means the log adds a layer of precision and flexibility for a variety of user habits.
  Another highlight is checking hydration data alongside other nutritional aspects in one fell swoop. This single glance not only tick-the-boxes but showers users with a view on general well-being in an assisted and balanced manner.

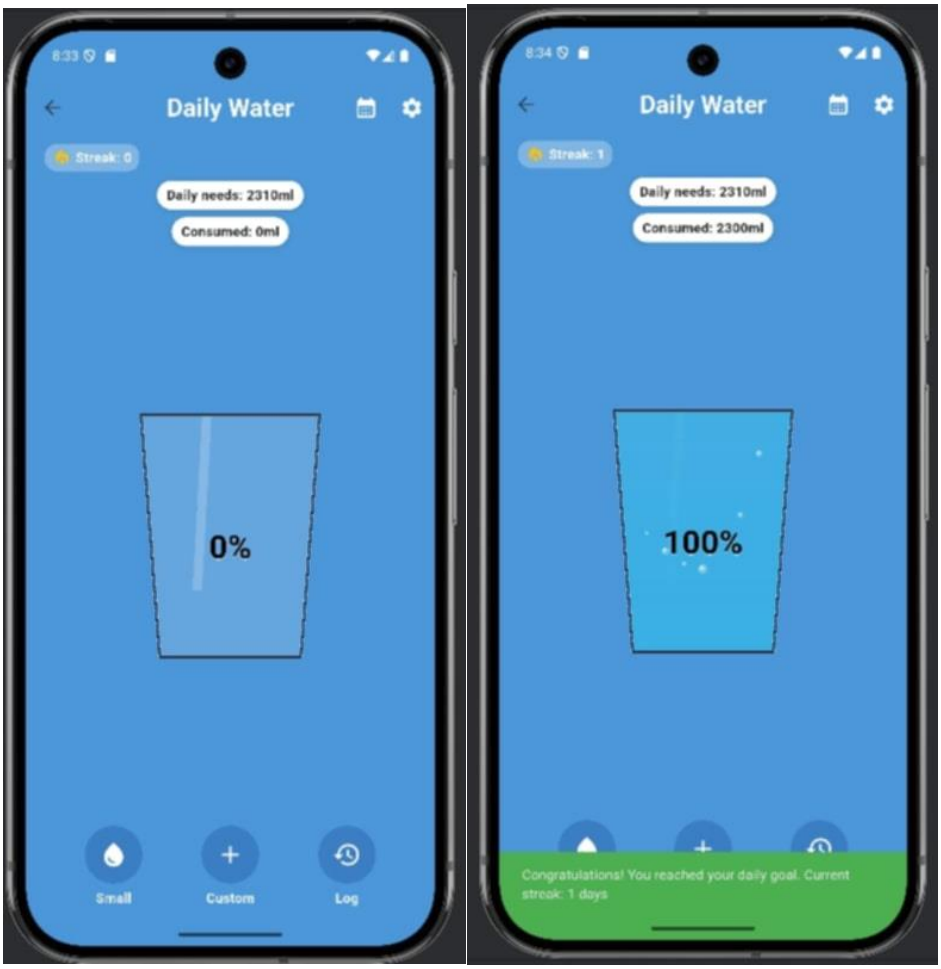

Figure 3.18: water tracking

- So, if we want to log our water consumptions and needs Water logging provides the perfect means by which people can keep track of their hydration status daily. For this reason, it shows water consumption along with its running total, for example in the picture shown, 1800mL, and an individual who can log a specific intake along with a timestamp. Users may set their preferred units of measurement and benefit from one-touch shortcut buttons for easy-log with standard or custom amounts. This detail-oriented tracking assures that one can keep himself in good habits with drinking water throughout the day. Both summarized and individual data are displayed by the clean and intuitive user interface, making the present monitoring of water drinking habits more thorough and accessible.

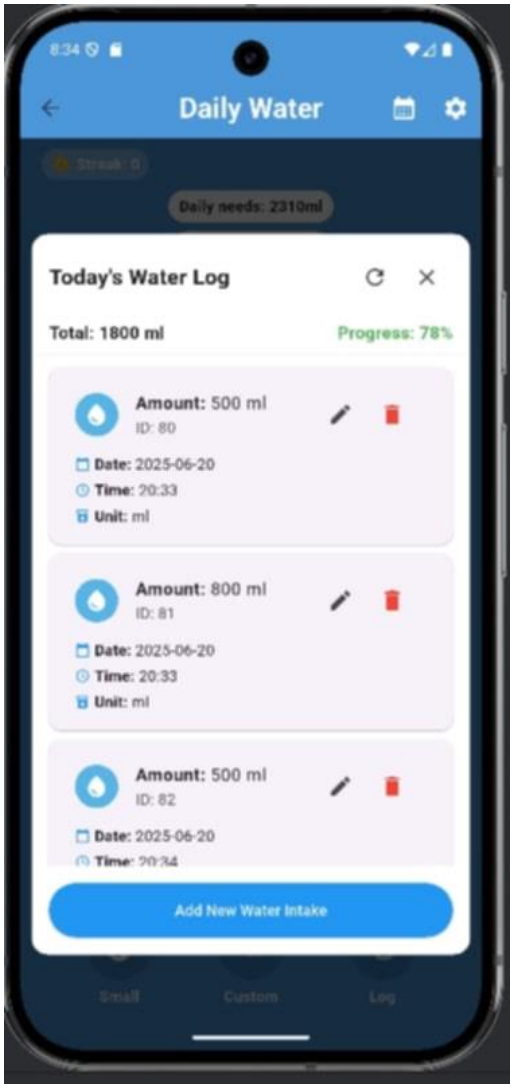

Figure 3.19: water logging

- The system tracks users not only in fulfilling their daily targets for hydration but also when those targets are surpassed, such as achieving 104% of 2310ml. By building-for-variability in users' hydration needs, this design accepts that, at times, they may drink less or more on an individual day. By showing figures exceeding 100%, the platform fully unveils hydration behavior with no suggestion of any stigma. Thus, clean and simple from the interface standpoint, whether one is under target, on track, or over their target. The final goal must be making people more aware of informed decisions rather than putting in some rigid time limit for them. This approach caters to everyone from those who may be on an advanced hydration plan to athletes and workers who fluctuate day-to-day in their requirements.

Figure 3.20: water intake more than person needs

- The water tracking-based feature caters to the calendar-interface wherein a glance serves users to check their hydration progress. Successfully completed days go away with green checkmarks to foster instantaneous visual feedback, along with satisfaction for finishing that day. The counter of "Current Streaks" tallies the mornings in a row during which the target has been achieved, while "Total Achievement Days" tallies all those days in total, adding benefits to the positive habit.
  Quick-Log offers preset options like the “Small” entry, plus customizable fields, streamlining data capture for users with limited time. Integrated motivation tools—including encouragement prompts and a streak-tracking system—boost ongoing engagement and habit formation. The multi-week calendar interface provides a clear overview, enabling users to identify behavioral patterns and adjust strategies to support long-term wellness goals.

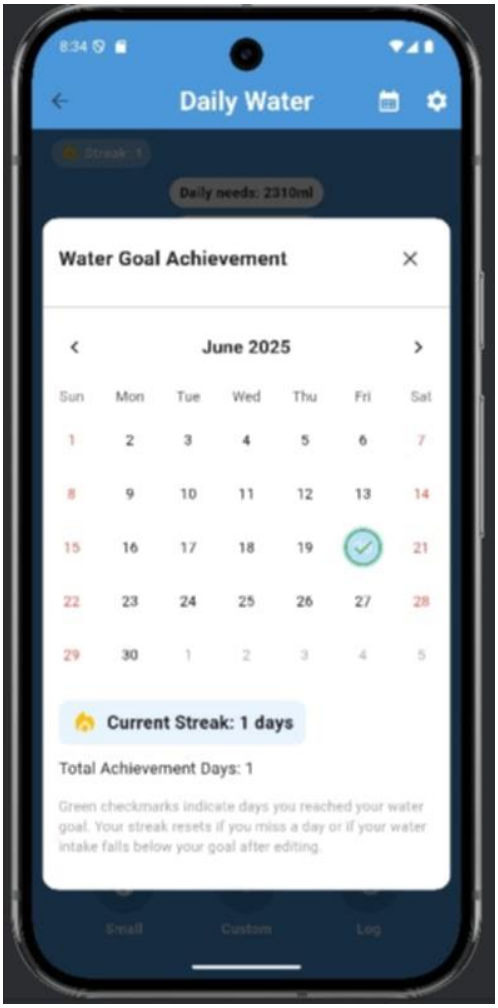

Figure 3.21: water tracking achievement’s

- The exercise tracking module delivers users a detailed snapshot of their activity stats—calories burned, exercises completed, and total workout duration, all right there on the main dashboard. Users have access to a weekly progress graph, which visually summarizes activity trends over the past seven days The platform includes a simple log for each day's "training" (whether that means tracking number of push-ups or calories burned), as well as how long the sets should last.
  Recording new workouts is quick and easy – allowing users to monitor their stats seamlessly over time. This method simplifies tracking of trends and serves as a benchmark to measure individual fitness goals. The interface has been deliberately kept simple and made to enable fast data entry and retrieval – there are no bells, no whistles – only the features you really need.

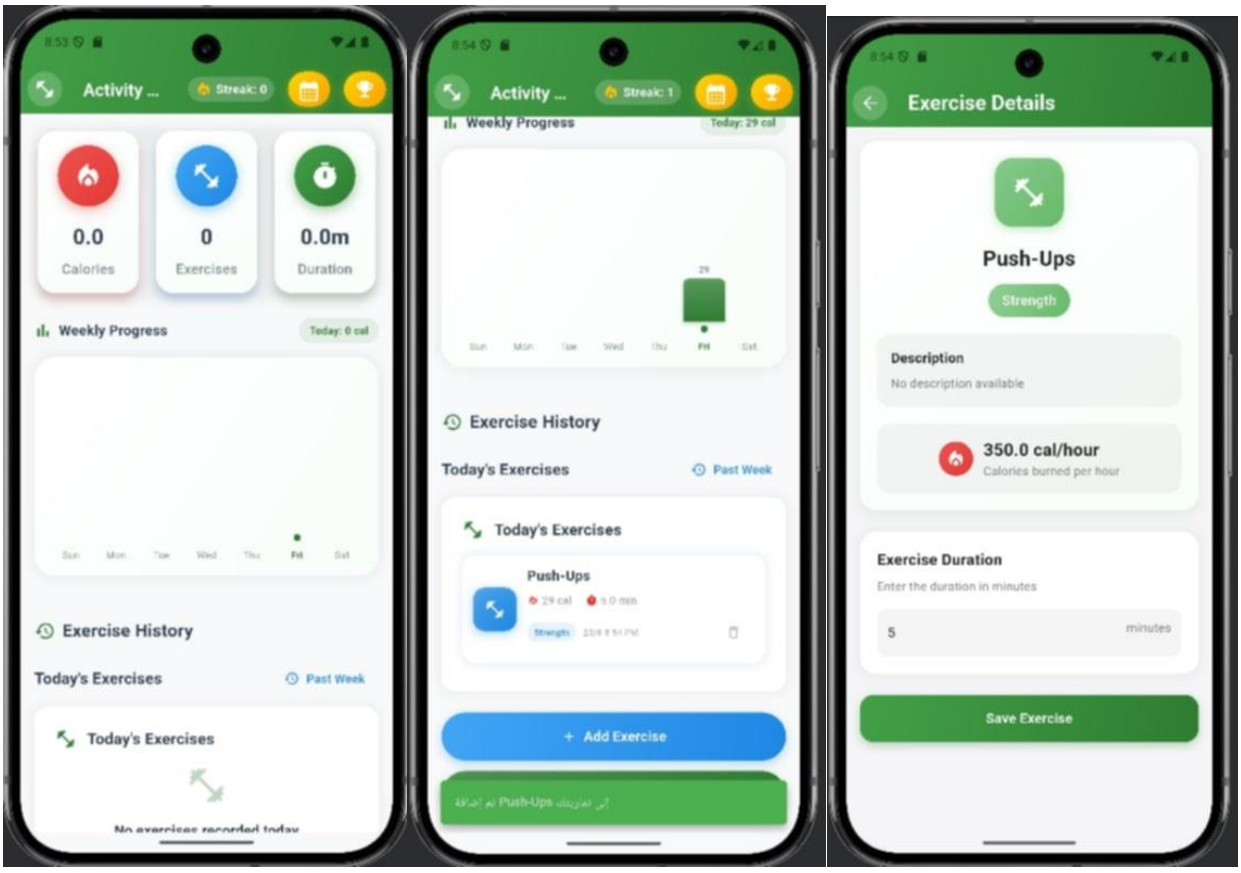

Figure 3.22: exercise tracking

- As we can see I can choose different types of e exercise and choose between them and I can add exercise of my own .

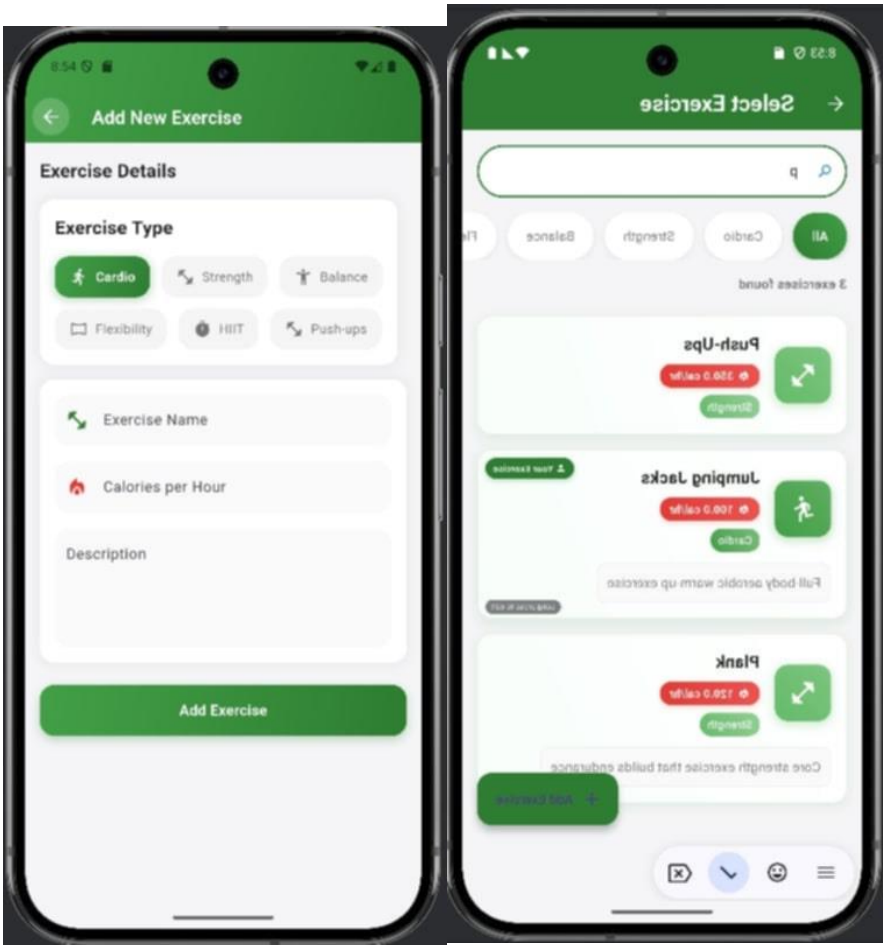

Figure 3.23: choosing exercise and adding

- You get to actually see how often you stick with your workouts—like, there's this visual for your streaks and all the days you nailed it, which is kind satisfying and weirdly motivating. And, there's this whole daily challenge setup, split by stuff like walking, cardio, strength—so you're not just mashing buttons, you're leveling up through these goofy titles like "Walker I" or "Cardio Master 1." It's all wrapped around this whole goal-setting thing, so if you want to hit "strength," well, you got bang out a 60-minute session or whatever they throw at you.so, you get that hit of motivation whether you're thinking long haul or just trying to drag yourself to move today. It's habit-building, but with a bit of gamified sparkle so it doesn't feel like a slog.

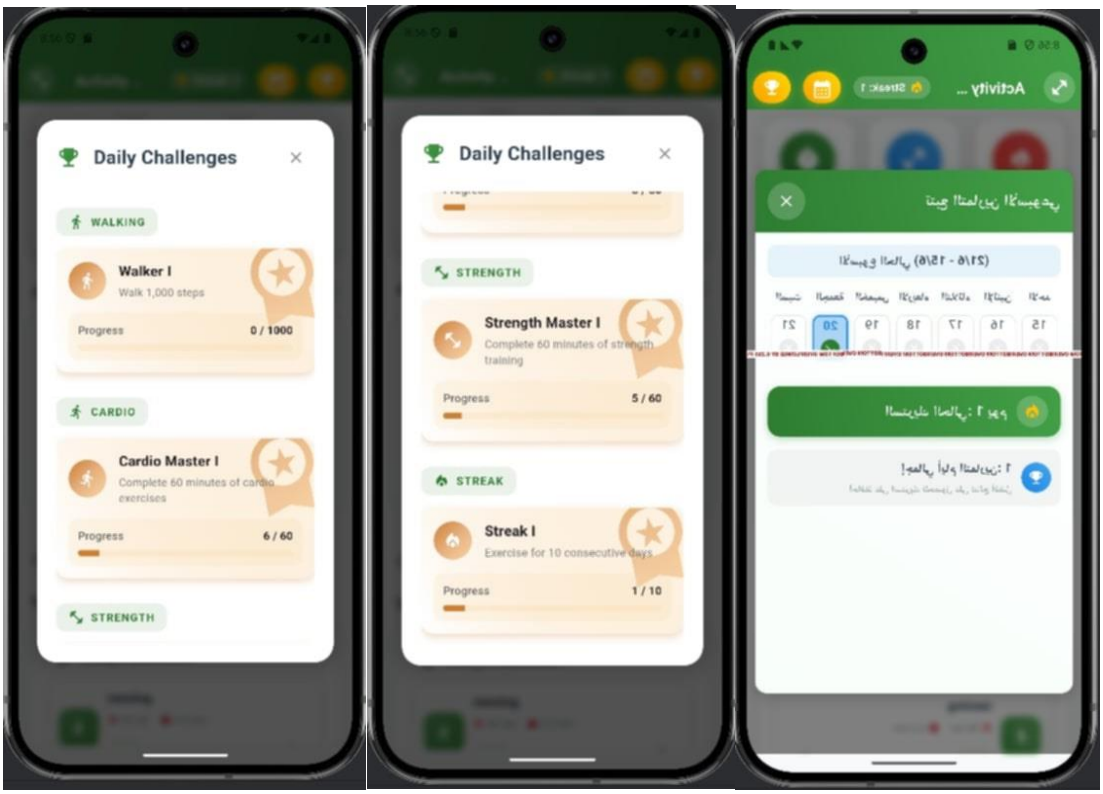

Figure 3.24: exercise achievement module

- our application got this smart sleep tracker that kicks off by basically asking you, “go to sleep now or you already know your hours?” If you press “I will sleep now,” ithe system utilizes a scientifically validated algorithm to suggest optimal wake times, structured around 90-minute sleep cycle intervals (for example, 1 hour 45 minutes, 3 hours 15 minutes, extending up to 9 hours 15 minutes). This approach is designed to support users in awakening during lighter phases of their sleep cycle, potentially enhancing alertness upon waking. You know, so you actually wake up feeling kind of ready instead of groggy and ready to fight your alarm clock .

But maybe you’re one of those organized types? There’s a clock thingy where you just drop in the time you plan to knock out and wake up. Super simple. So yeah, it’s got a little something for the spontaneous crowd and the planners. The whole idea is to use real sleep science but not box you in, right? Plus, it doesn’t stop at sleep; it hooks up with your meal and activity info for a more “big picture” health vibe. Basically, it’s like your personal wellness sidekick—just minus the cape.

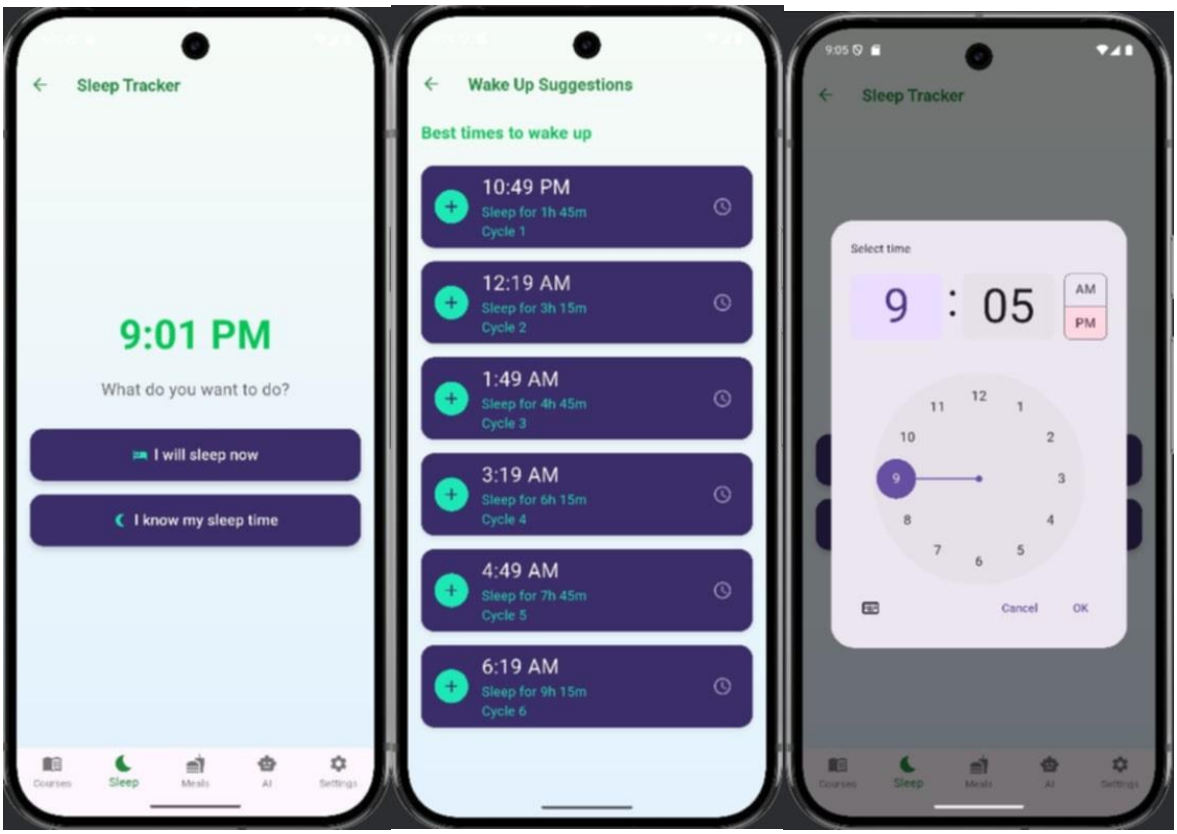

Figure 3.25: sleep tracking

- this app isn’t just some basic alarm clock. Nope. It’s got this slick audio-tracking thing going on—basically, it listens to the background noise while you sleep, you get to see live noise levels—like, for example in the picture it says “67.5 dB” or whatever’s happening in your room at 3AM you’11 know .
  And the recording part? Totally works hand-in-hand with the “smart alarm.” You can set it the old-school way, spinning that circular clock interface, clicking AM or PM, or just let the thing suggest times based on your actual sleep cycles. It’s got your back either way. There’s also this countdown showing exactly how much precious sleep you’ve got left Plus, it straight up tells you if your room’s “Noisy” or chill. it gives you hard numbers on your sleep setup and actually helps you wake up at decent times. Basically, if you’re trying to level up your sleep game, this is your new best friend.

Figure 3.26: noise tracking

- Imagine if Netflix and your local nutritionist got together—that's what's happening here. But instead of watching TV shows, you'll be browsing lessons like "How Do I Lose Weight?" Or, if you're feeling more in-depth, diving into the medical side of it with an actual nutritional therapy. Each course makes it clear: how long it'll take, whether you'll breeze through it or struggle, and exactly how much it costs. Need something specific? Filters and search are a breeze. You won't be drowning in a world of lectures on the wonders of celery. And paying? Super easy—use the card you already have. After paying, you get instant gratification. You'll get your confirmation, a receipt, and all the nitty-gritty transaction details if you're the type who pays attention to those details. But here's the bonus: these courses aren't just "watch this and forget it." They connect directly to the rest of the app—so you don't just absorb the information, you actually put it to use. Got a new tip? The app's tools help you put it to use right away. It's about improvement, not just knowledge—and not hating the experience altogether. I short? This app is smooth, secure, and does exactly what you want. There's no outdated, forgotten feature here. It's your personal nutrition coach.

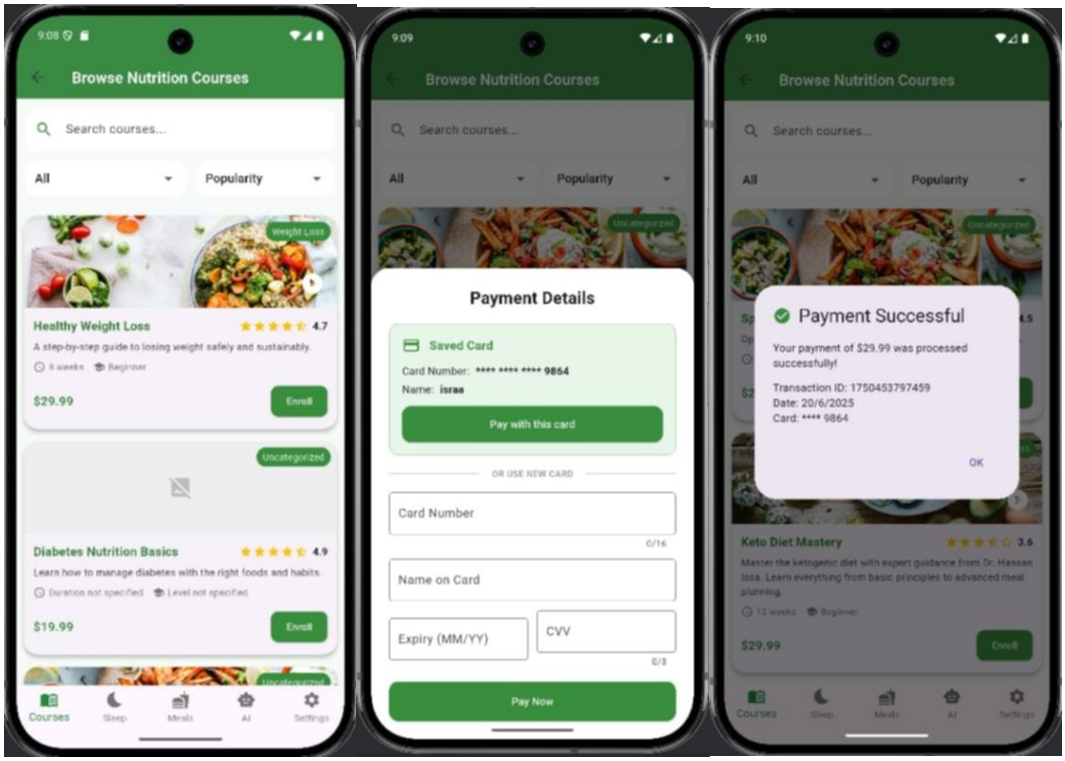

Figure 3.27: buying a course

- You buy a course for example like Keto Diet Mastery, and suddenly you've got this whole online playground for you. the app chop everything up into bite-sized, daily lessons. Some days you're watching videos , other days you're knee-deep in meal plans—like, "hey, here's what you're eating on Day 1." And then they throw in these little challenges, like "Track Your Macros," which, honestly, is way easier to do when the app's holding your hand.
  You're not flying solo either. Real experts—for example like Dr. Hassan Issa, are running the show. There's a progress bar (gotta love those dopamine hits), you can see who else is slogging through with you, and people rate the course . Plus, you can book a chat with a dietitian or jump into the group chat.
  All this stuff—videos, trackers, meal plans, real humans—kind of merges together, so you can actually stick with the diet.

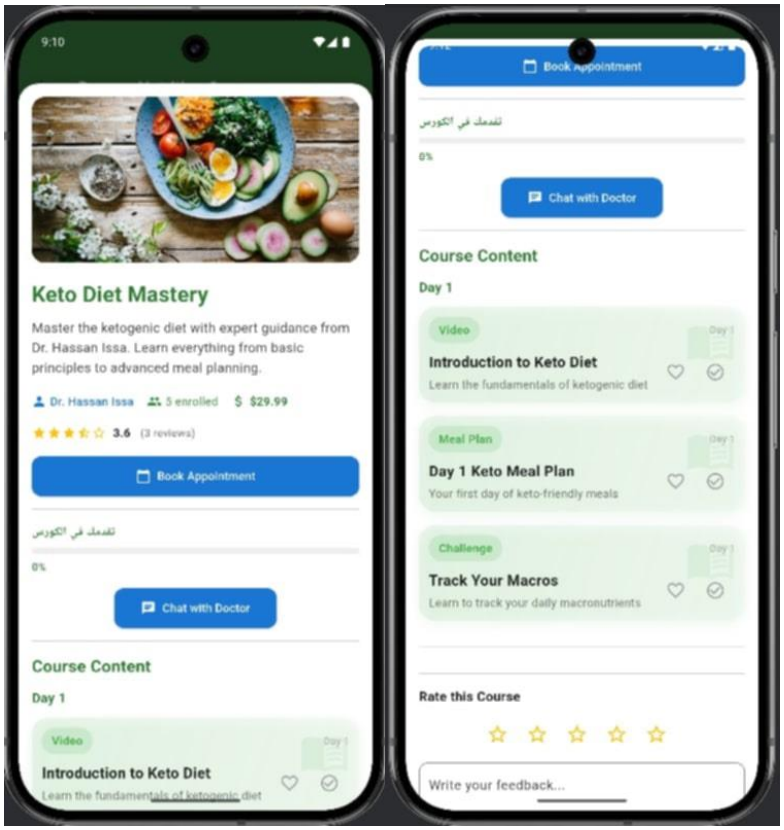

Figure 3.28: the course

- So, the app basically lets you book an appointment with nutrition pros like Dr. Hassan Issa. You just dive into this booking, pick your specialist, punch in the date (let's say, 21/6/2025,), jot down why you're visiting, and bam—you're halfway there. Once you confirm, the app hits you back instantly with all the Deets: who you're seeing, when (like 3PM sharp), where (Nablus City Center, Palestine), and a rundown of Dr. Issa's creds, so you know you're not just talking to some random guy with a stethoscope. Now, here's the cool part—this isn't just a boring calendar. While you're geeking out on course content (maybe you're on that Keto Diet Mastery grind), you can schedule a real-life consult without missing a beat. It's like, "Hey, I want learn about keto…and, oh, let me book a doc."Plus, the app doesn't leave you hanging. Need to call or email Dr. Hassan? His digits (+970591234567) and email (dr.hassanissa@healthmate.ps) are right there, no detective work needed. After you book, you can check your appointments or even shoot the doctor a chat and also, if you want to book an appointment in a time you want but that time is booked and the person just cancelled his appointment a notification will be sent to u.

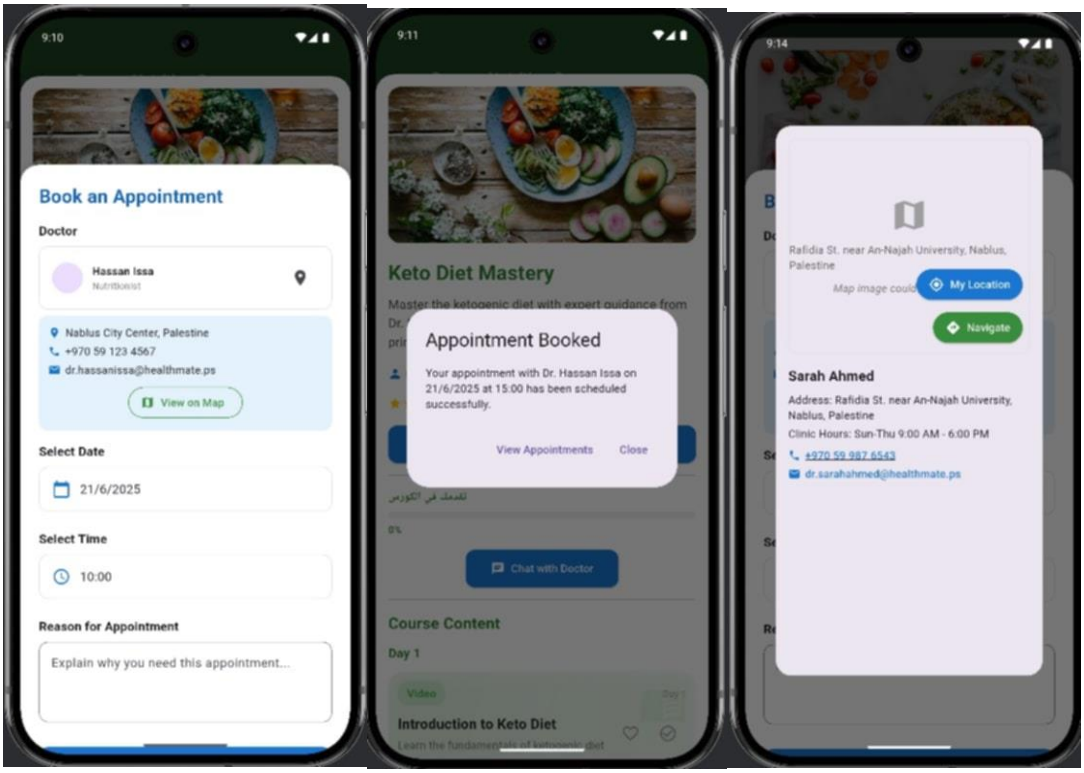

Figure 3.29: booking an appointment

- Navigation system that it will make it easy to user to reach his Nutritionist with estimated time the user has free to choose between navigations mode that suit him/her.

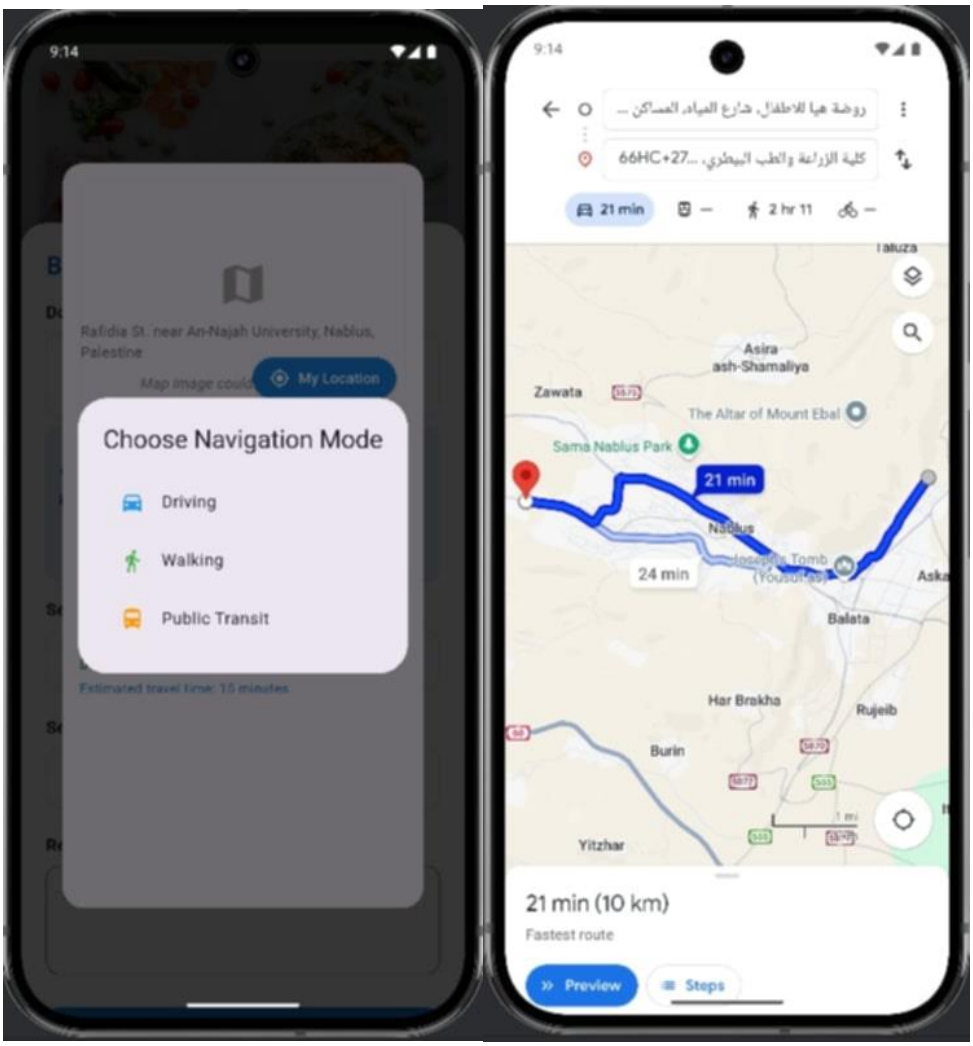

Figure 3.30: navigation system

- ai assistance that can help you in everything analysis food ask the ai health and nutrition questions tracking water sleeping everything that the user needs diet goals and help the user to book appointment.

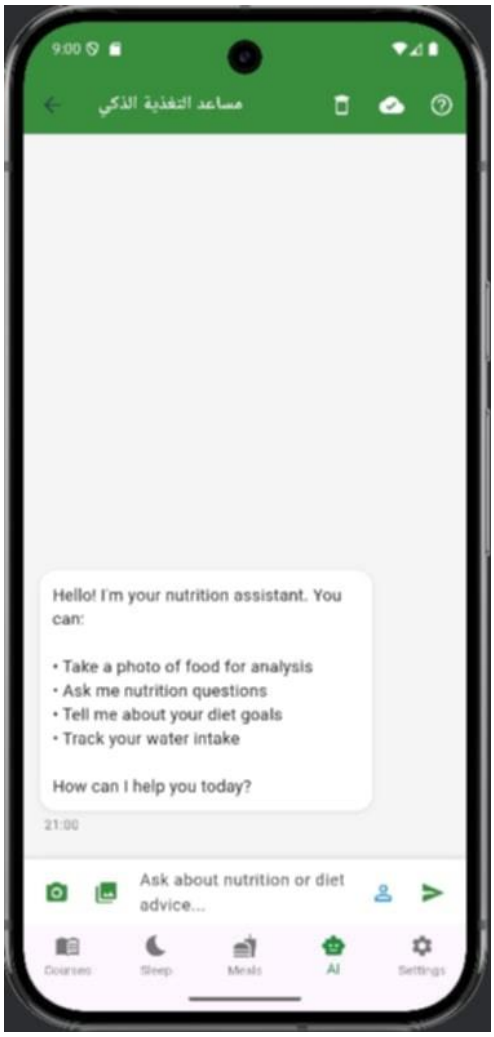

Figure 3.31: ai assistance

- The application features a full Settings page, which serves as one repository of all the health-tracking user preferences. The page is organized into separate, easy-to-use pages such as Personal Details (name, gender, date of birth) and Body Measurements (height, current weight, and target weight with BMI calculated automatically). this app lets you take the wheel with your own health. Wanna go slow? Cool. Wanna crank up your workouts or laser-focus on dropping a few pounds? Totally your call. You can tweak your goals, mess with your exercise levels, and even tell the app to quit nagging you about water or food if that's driving bothering u. Flip those notifications on or off—whatever works for you. On the security front, it's not messing around. You get all the usual stuff—like being able to ditch your account or update your payment info—but also some beefed-up privacy controls and two-factor authentication. So, you know, your personal health data isn't just floating around out there.

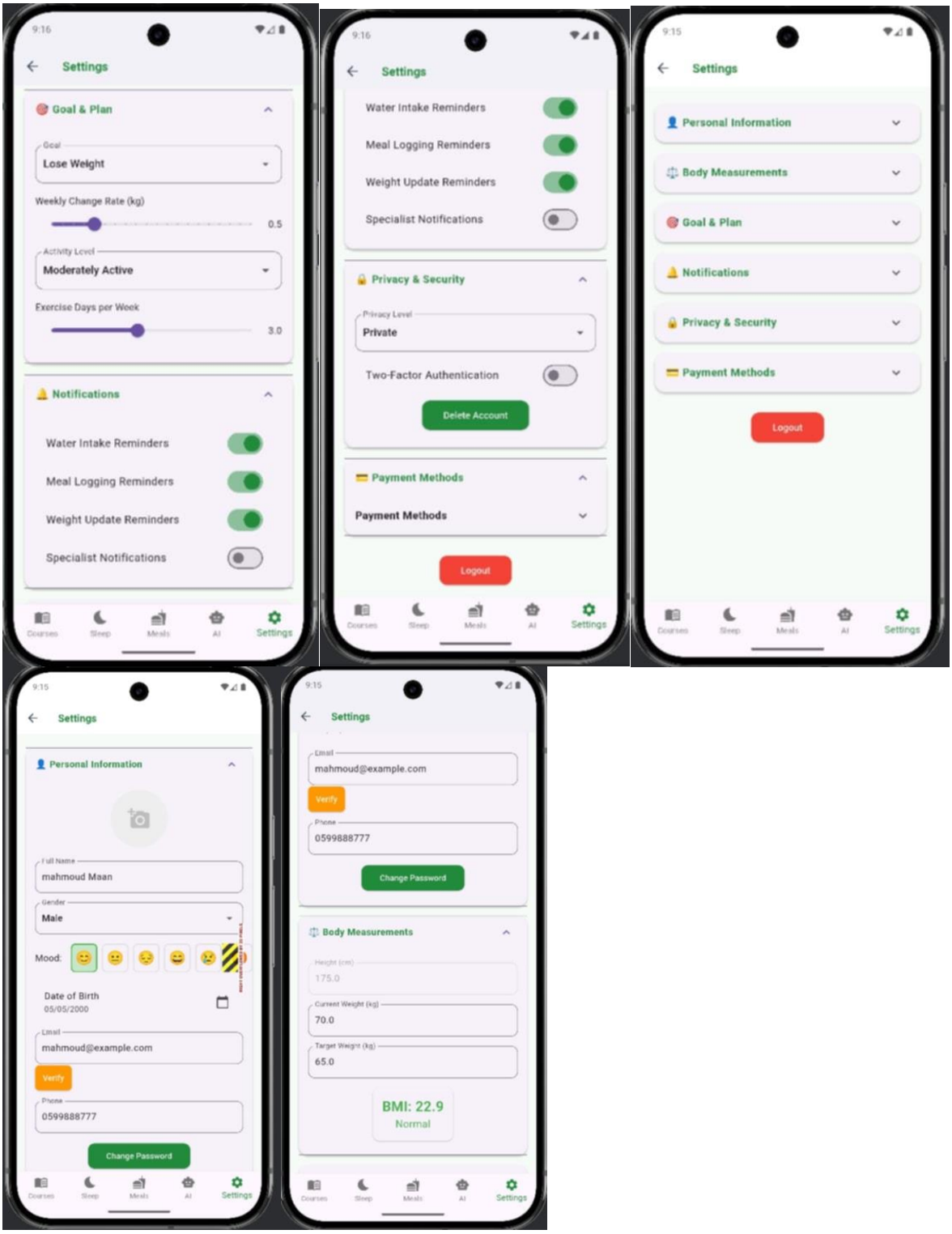

Figure 3.32: user setting page nutritionists

- The described application acts as the all-in-one solution for nutritionists (this is nutritionists home page), with the integrated dashboard meant for appointment management at top speed and client monitoring. The user interface contains a month calendar with the works done on the month of June-2025, while AI spontaneously interject with insights: scheduling preferences from the bookers, where the info might state something like: Busiest hour: 17:00-18:00, so they can schedule accordingly.
  Performance indicators are always a click away and give users clarity on workload metrics such as: daily rate of completion at 33%-50% and progress indicator says 2/10 appointments completed. The system categorizes appointments by type (New, Review, Emergency) and tracks their status (Completed, Cancelled), assisted by sight icons to guarantee ease of differentiation.
  Client information including name and time of schedule is displayed beside each session, to facilitate practitioner workflow. In addition, there exists a countdown for an upcoming appointment (e.g., 01:58:19 remaining) and an export function for additional data...

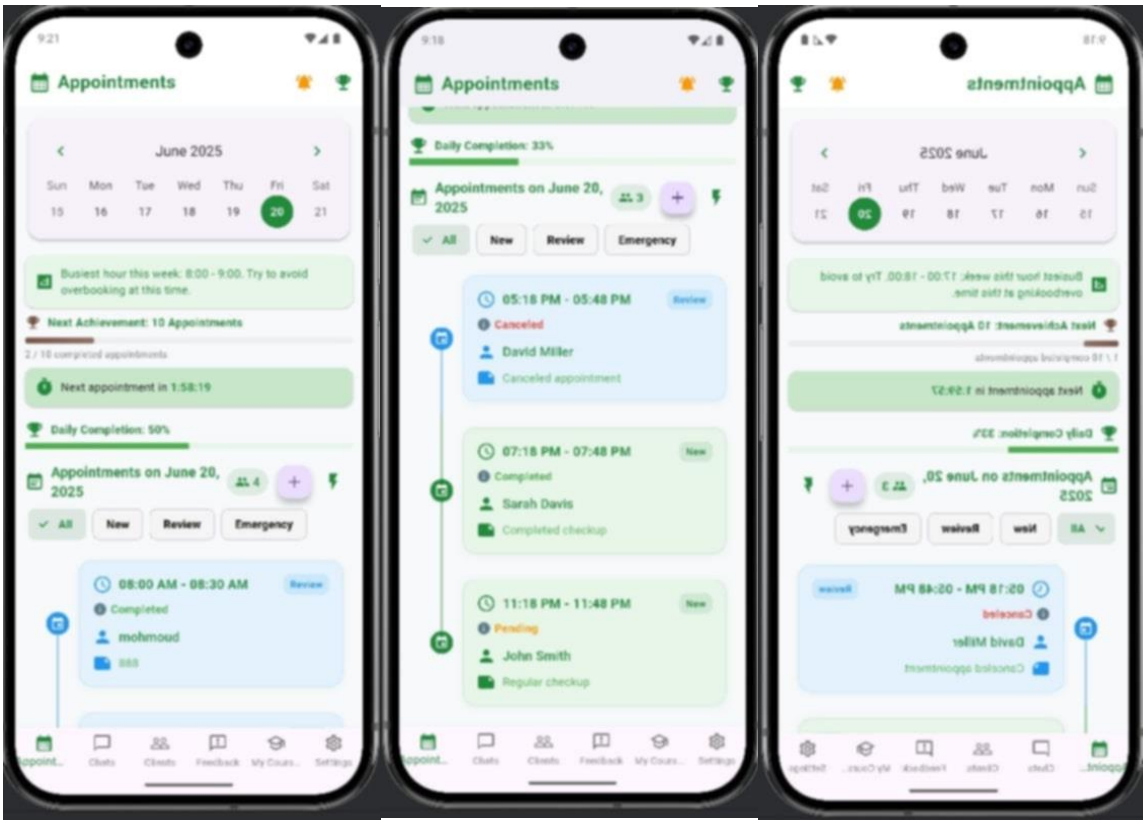

Figure 3.33: nutritionists screen

- Designed with nutritionists in mind, an all-encompassing appointment calendar combines scheduling services with client follow-ups and practice analytics within one holistic system. Also, the calendar view at a monthly level includes AI-generated suggestions, for example, highlighting operational peaks such as 8:00-9:00 AM, thus better managing time Around them .
  Appointment statuses, such as New, Review, Emergency, are visually indicated through different icons, hence letting practitioners evaluate the workflow on the fly. The results, such as Complete, Pending, and Canceled, are displayed graphically, while productivity is measured by numerical indicators, such as "Daily Completion" percentages, and progress tracking of appointment goals.
  Interconnections between clients and procedures are carried out smoothly with detailed appointment requests, thereby allowing practitioners to approve or disapprove of said requests ("Mahmoud Maan - Weight management advice," for example). Intelligent assistant further supplements the scheduling, suggesting available time slots.

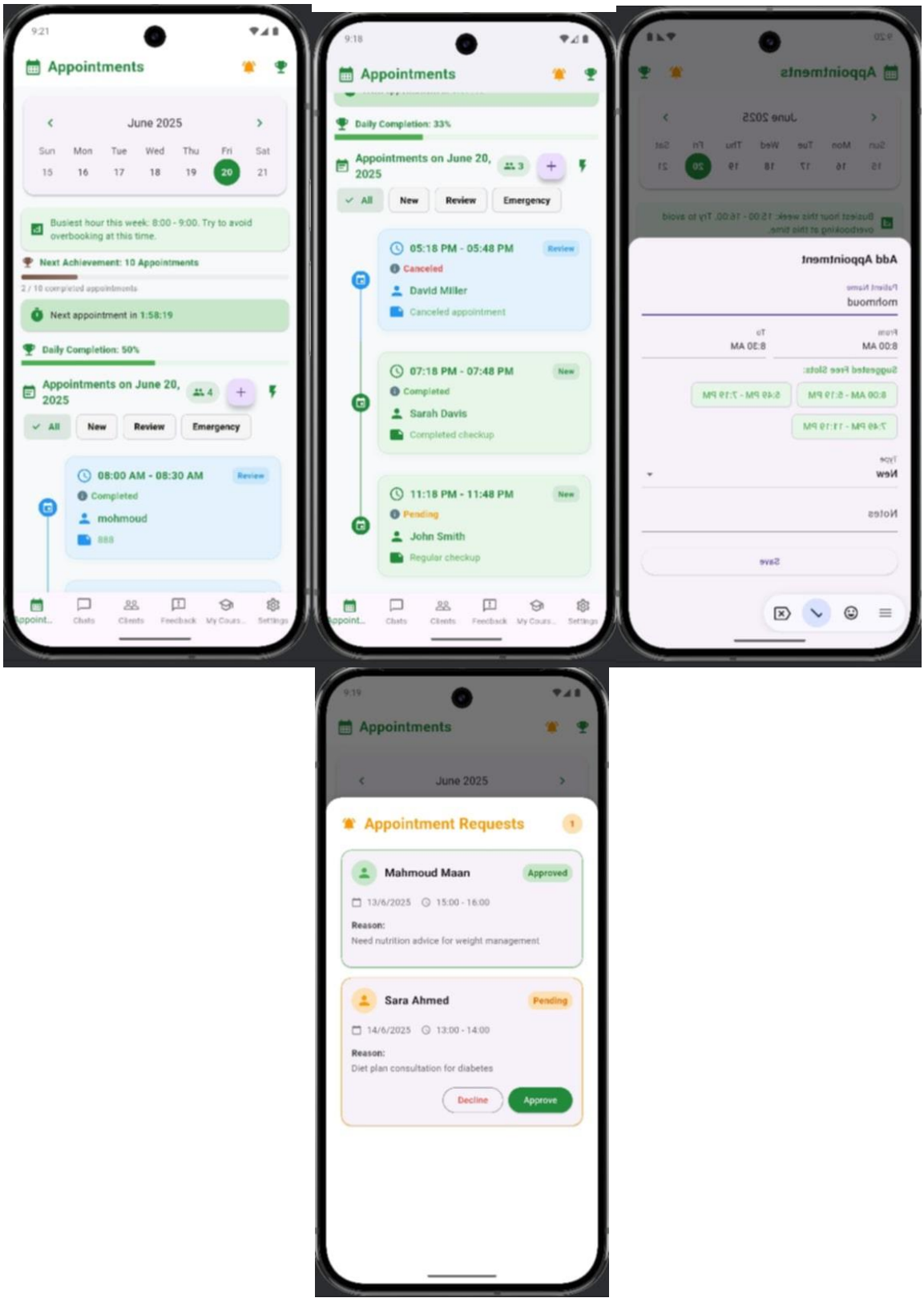

Figure 3.34: appointment screen

- Quick add to quick add patients.

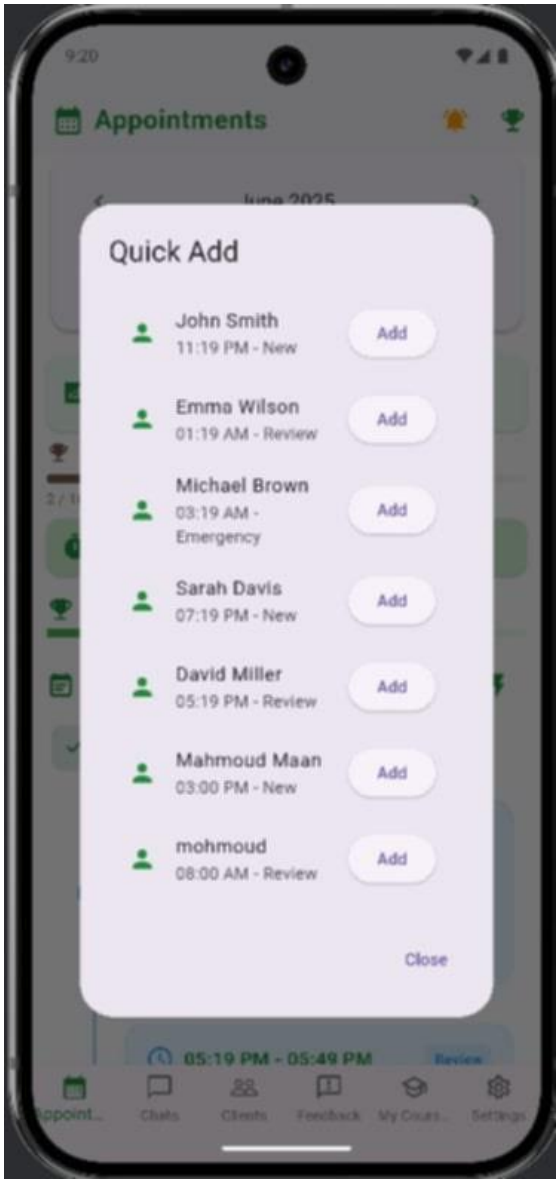

Figure 3.35: quick add

- Achievement for nutrition that motivates nutrition professionals by tracking and rewarding appointment milestones. This system encourages consistent performance by visualizing career growth through tiered goals, blending professional development with practical scheduling tools.

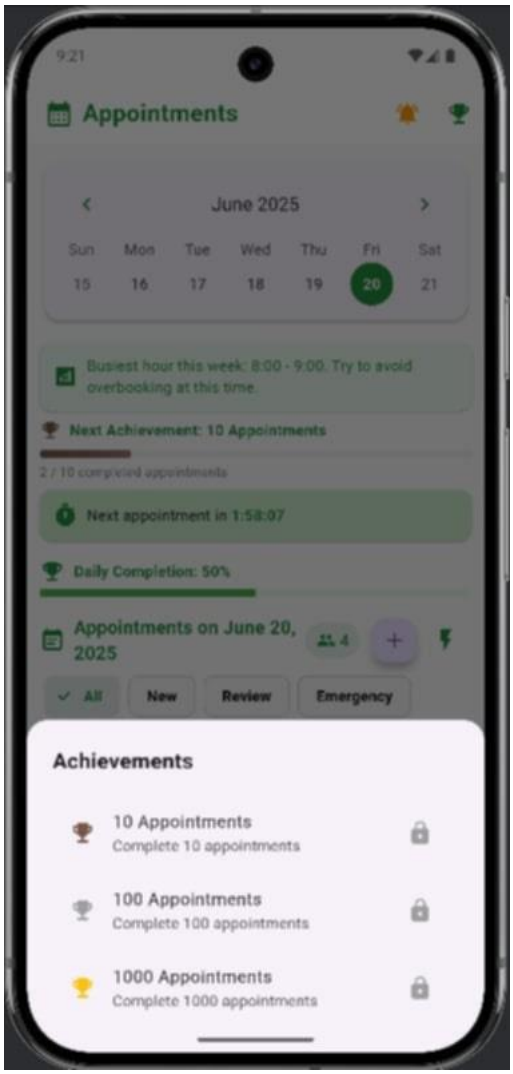

Figure 3.36: nutrition achievement

- Our application offers an integrated approach to patient management, joining clinical oversight with comprehensive tracking of progress. Patient profiles maintain essential metrics such as age, height, and weight, along with notes on behavior records. A quantified Health Score, with a typical value of 88-91%, gives a quick and lightweight way to gauge and confirm patient wellness.
  Another rewarding aspect in the platform tracks the achievements automatically; for example, completing a 7-day exercise streak. Searching makes it easy to work between patient records. Dual design works to make clinical workflows easier for healthcare professionals and improvements for patient engagement with visible progress tracking.

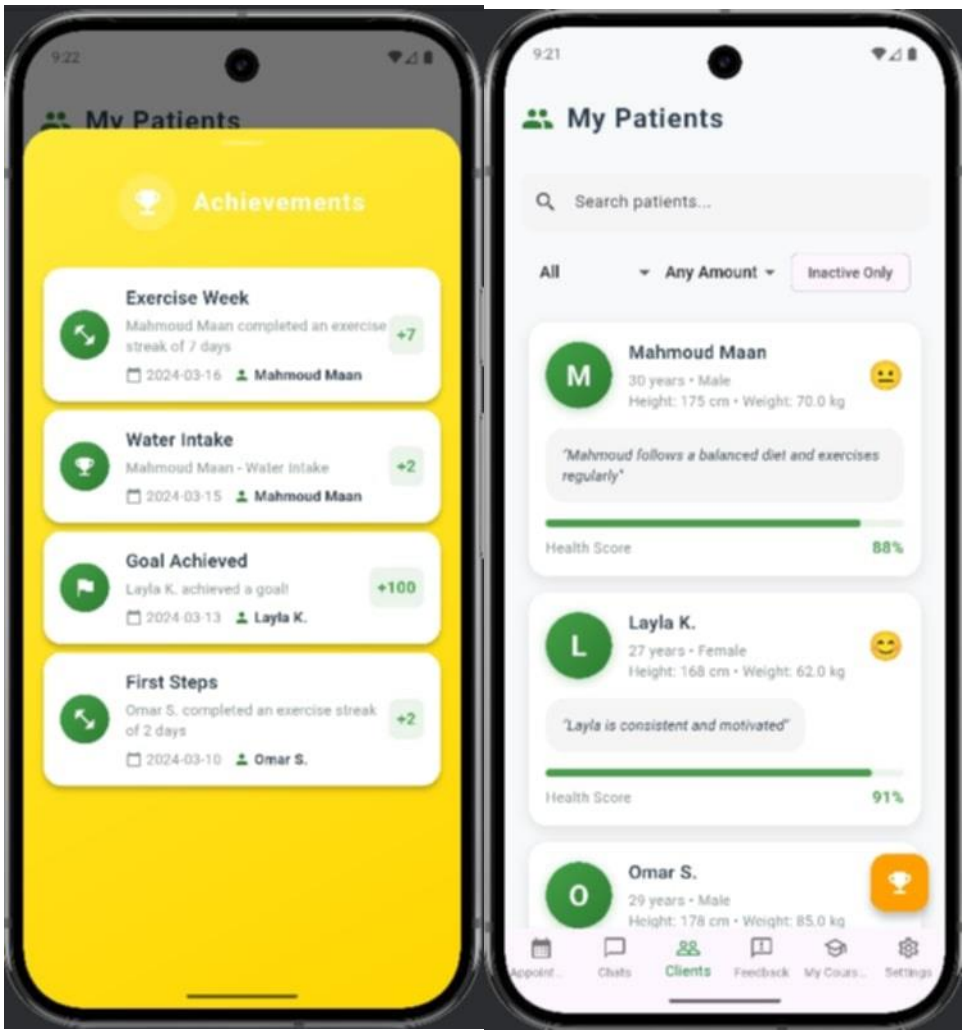

Figure 3.37: nutrition track patient status

- Our app course management system very nice and comprehensive, allowing nutrition professionals to design targeted dietary programs with hardly any restrictions. For instance, in a Keto Diet Mastery course, instructors can set their classes between two dates, say June 20 and July 4; during the course, they can then present various types of content, which may include video lectures, formal meal plans, or analytic challenges. Also, the system permits adjustment of parameters such as difficulty or price to cater to different learner needs.
  To help course participants, modules are structured on a daily basis; for example, Day 1: Basics, and Day 2: Meal Planning. The platform caps the whole setup by featuring live sessions, a community forum, and certificates as rewards after course completion. For instructors, the dashboard offers a glimpse into KPIs like the number of subscribers and course ratings that support decisions based on data. Also, chats and feedback allow for meaningful interaction between nutrition and patient.

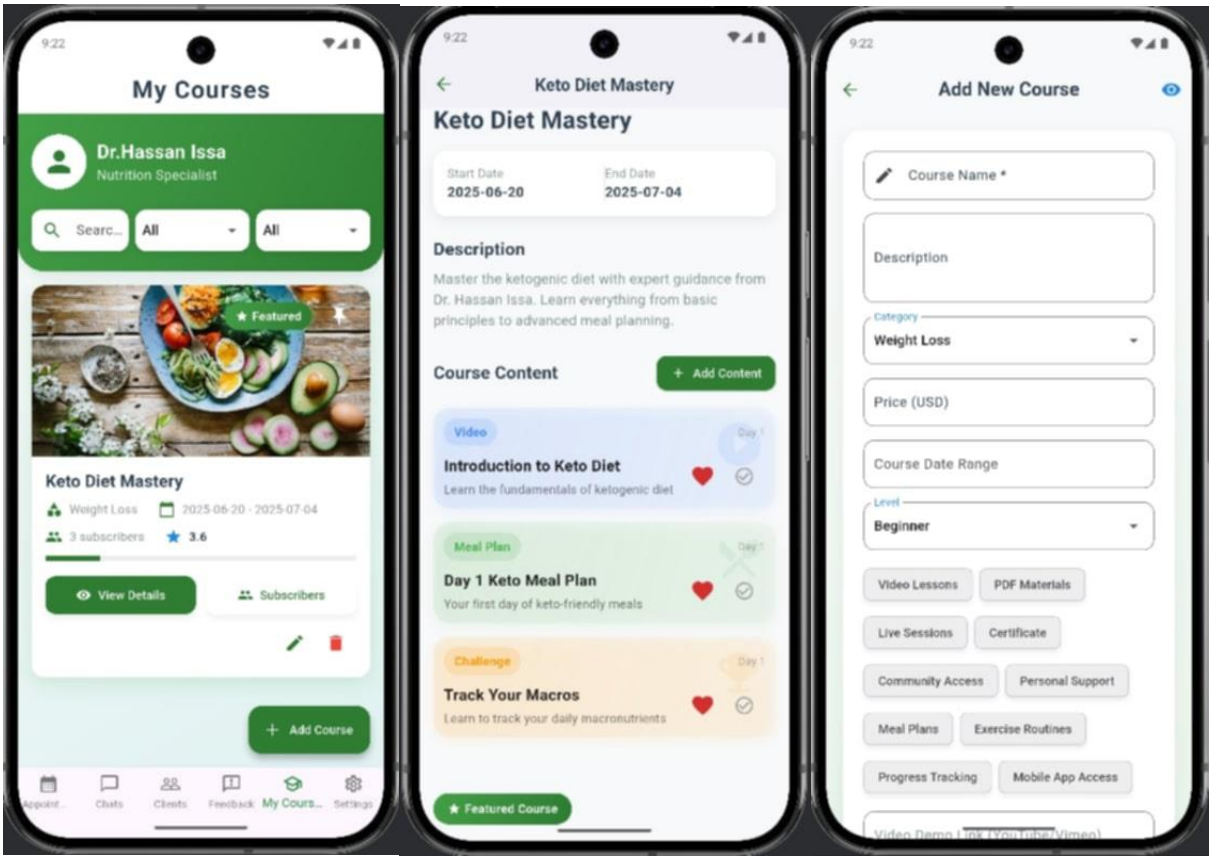

Figure 3.38: nutrition add course

- Chatting between Mahmoud and dr as we can see how Mahmoud interact with doctor and how the doctor tracking Mahmoud goals and health.

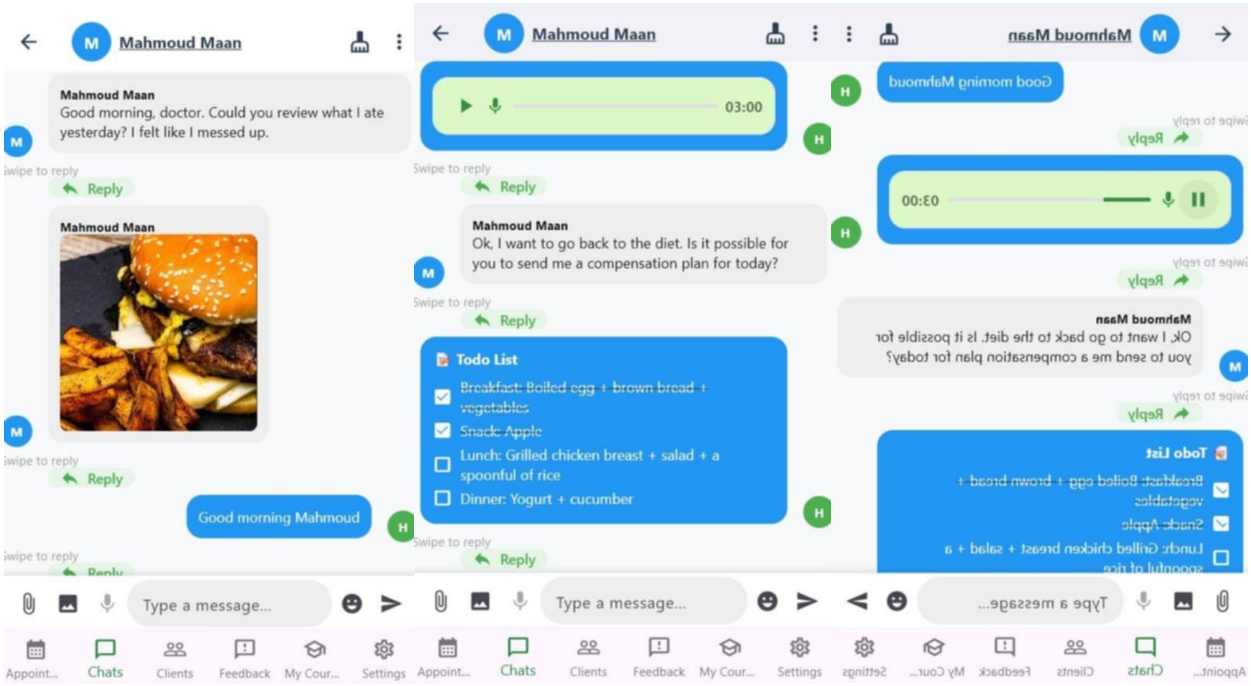

Figure 3.39: chatting between nutrition and patient

- Nutrition feed back screen patient who took a course on specific nutrition can rate them and rate the courses in the same screen we see nutrition achievement bar so the nutrition can track their improvement in works and goals.

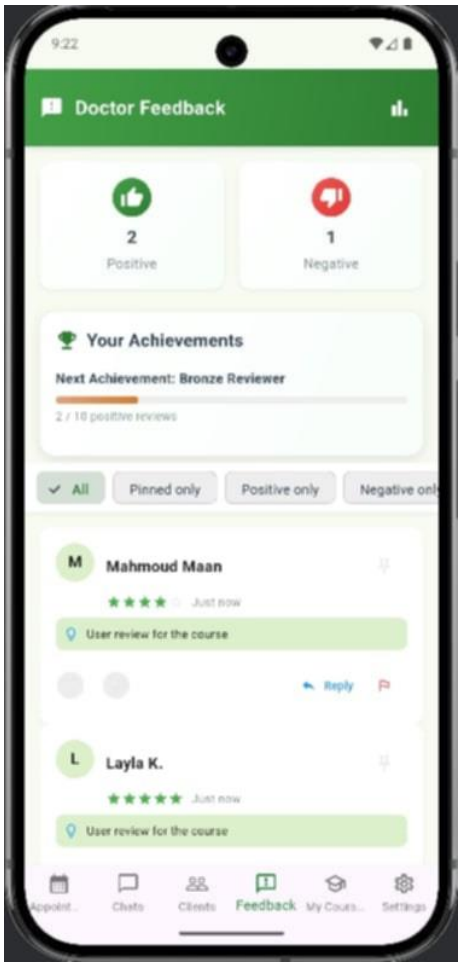

Figure 3.40: feedback screen

- The application extends the nutritionists with a broad spectrum of customization settings for professional accounts and workflow preferences. In this control panel, practitioners can exactly set working hours (for instance, from 9:30 AM to 9:30 PM) and select preferred consultation types: is it live-based or file reviews at their convenience?
  Another option is allowing the clinician to define clinical areas of interest, e.g., Clinical Nutrition and attach educational materials or protocols relevant to such clinical areas. The notification management facilities allow the user to configure alerts so essential communications about important events (for example, client messages, course updates) are received by practitioners, with unnecessary distractions kept at bay.
  Strong options exist for security and account management related to enforcing professionalism and the integrity of data. A well-organized interface gathers the different options under clear sections, using toggle switches and input areas for the best mix of functionality and accessibility.

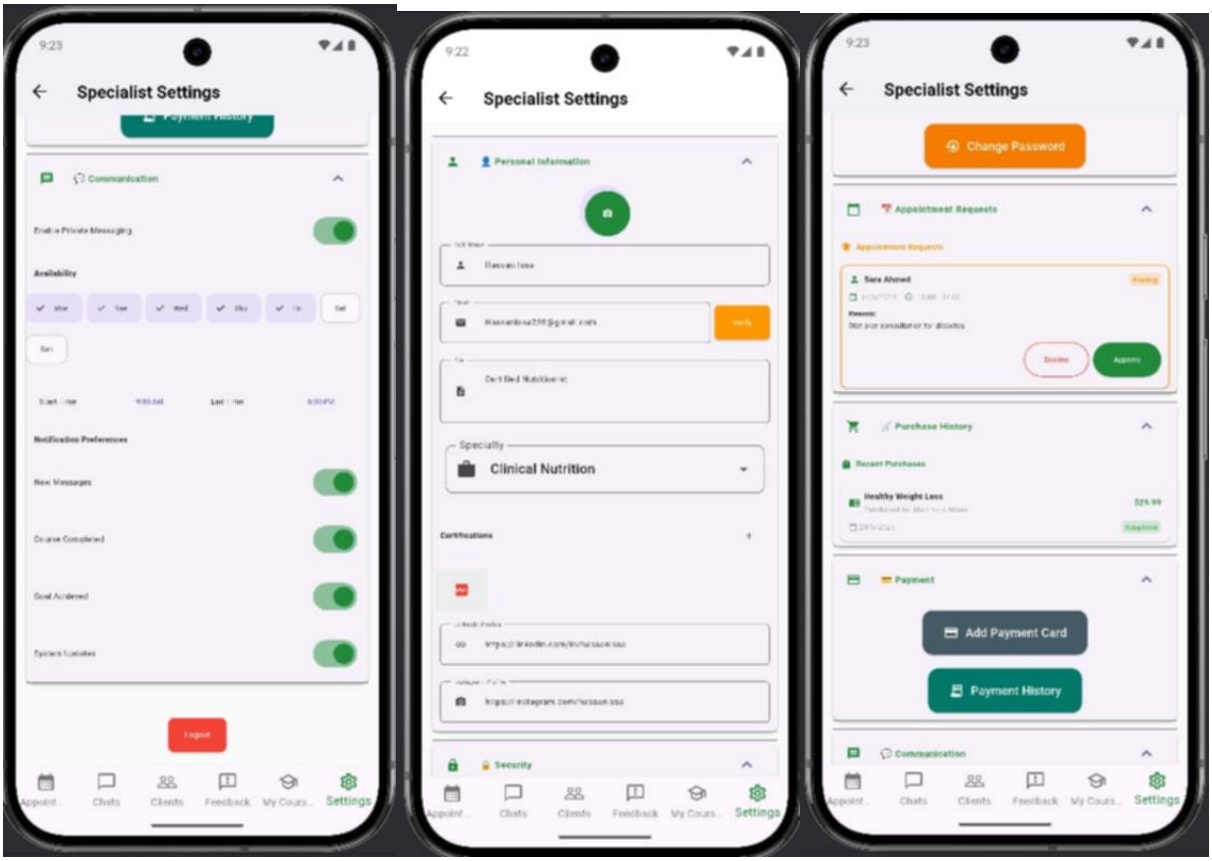

Figure 3.41: specialist setting screen

Chapter 4

Results and Discussion

4.1 Functionality and User Experience

The Health Mate app makes it easy to keep an eye on what you eat and set health goals. You can log your food by searching, typing it in, or scanning barcodes. It also helps you plan meals and track your progress with handy visual charts .

It also works with wearables to give you a full picture of your health. The design is simple and easy to use, so you can switch between different parts of the app without any hassle. With icons, graphs, and progress bars, the app looks good and makes tracking your health easier. You can also set up custom dashboards to quickly check your key health stats.

The app’s simple layout, real time updates, and refreshing UI received praise. While a minority voiced desire for more food options and a dark mode. All in all, the app serves its purpose well and encourages users to maintain healthy eating habits without being burdensome.

4.2 Anticipated Impact on Service Providers

The Health Mate helps fitness trainers, dietitians, and medical professionals manage nutrition more easily. By automating tracking, it allows these experts to focus on providing personalized advice. Users can quickly adjust plans through the app's dashboard, which highlights any missing nutrients. It also connects to health platforms to share data, improving client interactions. The main goals of this app are to improve accuracy, save time, and encourage clients to participate more actively in their diet.

4.3 Anticipated Impact on Clients

The Health Mate helps users keep an eye on their eating habits and nutrition. It allows folks to track calories, macros, and micronutrients, which makes it easier to choose foods that match their health goals. The app sends reminders and shows progress reports to keep people on track with their diets, while the visual stats motivate users by showing how they’ve improved over time. This tool helps you keep track of what you eat. It aims to raise awareness about health, support weight management, and encourage healthy eating over time. In the end, users can feel more in control of their nutrition and overall health.

4.4 Integrating Features from Existing Platforms

The Health Mate gets better by bringing in cool new things from other well-loved health apps. Here's what you'll see:

- Big food lists and MyFitnessPal for spot-on nutrition details. - Links to devices like Fitbit and Apple Health to keep an eye on both eating and moving. - Meal planning tools taken from the best nutrition apps. - Community parts to keep you going and get help.

With these new things, the app is simpler to use but still keeps its main job of tracking what you eat.

4.5 Discussion

The development and the inspection of the Health Mate application demonstrate its efficiency in addressing major problems associated with health maintenance. Via the use of AI, reminders, and the simple screens, it provides the consumers with all the necessary instruments to watch over their eating habits, sleep routine, water intake, and physical activity. The bidirectional communication mode not only provides users with the extra value of being able to observe by themselves but also the experts can give them their advice.

Nonetheless, the project identified some areas of the application that needed improvements like the demand for more in-depth AI learning, better compatibility with wearable devices, and advanced analytics. From the responses of the customers, it was noticeable that they were very pleased with the main features of the app, and at the same time, they proposed some advanced updates for the sake of the experiences of customization and interactivity. In general, the project success proves its secure basis with future opportunities for growth, that mirrors the coexistence of innovativeness and practical usability.

Chapter 5

Conclusion

5.1 Summary :

The Health Mate Project is creating a straightforward app for both mobile and web. It helps folks keep track of their food, workouts, sleep, water intake, and any medications they take, all aimed at building better habits. Nutritionists can also check in on their clients, giving tailored advice or setting up meetings.

This app has some cool features, like food recognition using AI, QR code scanning, real-time alerts, and different access for nutritionists and regular users. It's made to make managing health easier and more enjoyable.

It’s user-friendly for everyone, whether you’re tracking your own health or a nutritionist looking after clients. It’s especially useful for:

- Anyone wanting to get healthier.

- People dealing with health issues like diabetes or obesity.

- Nutritionists helping their clients.

5.2 Recommendations for Improvement :

The Health Mate app is pretty useful but far from perfect. It needs to read more foods, not just the basics. It doesn’t even have your favorite local dish listed.

Lastly, it’s really important that the app be made simpler to use in general. Some screen reader support exists, but more informative audio and voice controls would be of great help for the visually impaired or those with mobility issues. A less cluttered design with large-sized texts and icons might also be beneficial for aged end-users or those not much tech-savvy.

The tracking and predictions may be enhanced. Currently, it shows very basic trends but intelligent insights would show the user what exactly is missing from their diet or when they have become oblivious to their weight going down. More personalized tips may make it a really useful application rather than just another nutrition tracker.

5.3 Lessons Learned

The Health Mate app is pretty useful but far from perfect. It needs to read more foods, not just the basics. It doesn’t even have your favorite local dish listed.

Lastly, it’s really important that the app be made simpler to use in general. Some screen reader support exists, but more informative audio and voice controls would be of great help for the visually impaired or those with mobility issues. A less cluttered design with large-sized texts and icons might also be beneficial for aged end-users or those not much tech-savvy.

The tracking and predictions may be enhanced. Currently, it shows very basic trends but intelligent insights would show the user what exactly is missing from their diet or when they have become oblivious to their weight going down. More personalized tips may make it a really useful application rather than just another nutrition tracker.

5.4 Future Work and Directions :

We're looking at three key things to make our Health Mate app better. First, we want to improve how well the app identifies food and offers tips tailored to various diets around the world. Next, we're adding more connections with health records and wearables so users can easily monitor their health, Lastly, we're adding community features like forums moderated by nutrition experts and group challenges led by our AI to get people more involved and accountable. These updates should help make our app an even better tool for health and wellness.

5.5 References:

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